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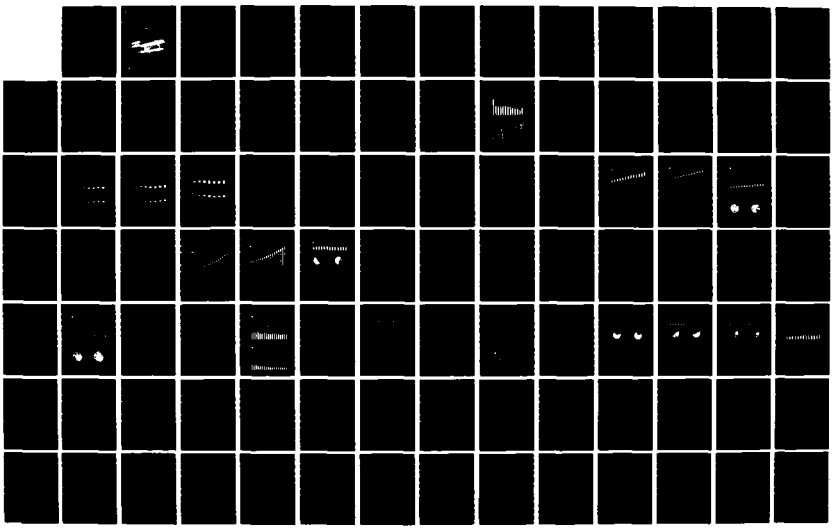

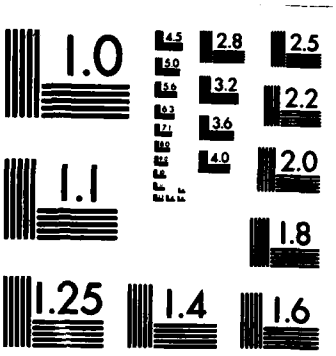

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February 1985

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U.S. Department
of Transportation
**Federal Aviation
Administration**

FAA AVIATION FORECASTS

Fiscal Years 1985-1996

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16. Abstract

This report contains the Fiscal Years 1985-1996 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public.

The overall outlook for the forecast period is for strong economic growth, relatively stable real fuel prices, and moderate inflation. Based upon these assumptions, aviation activity is forecast to increase by Fiscal Year 1996 by 62 percent at towered airports (commuters, 70 percent; air carrier, 28 percent; general aviation, 74 percent; military, 0 percent), 44 percent at air route traffic control centers (commuters 102 percent; air carriers, 38 percent; general aviation, 51 percent; military, -2 percent), and 47 percent in flight services performed. Hours flown by general aviation is forecast to increase 45 percent and helicopter hours flown 84 percent. Scheduled domestic revenue passenger miles (RPM's) are forecast to increase 78 percent, with scheduled international RPM's forecast to increase by 82 percent and commuter RPM's forecast to increase by 180 percent. Additional keywords: civil aviation, economic analysis, planning programming budgeting, airports.

17. Key Words	18. Distribution Statement
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Preface

The Federal Aviation Administration forecasts of aviation activity and other selected statistics are developed annually for use in the Agency's planning and decisionmaking. Aviation activity under the control of FAA towered airports, Air Route Traffic Control Centers, and the services provided by the Flight Service Stations are forecast for the several user groups--certificated route air carriers, commuter airlines and air taxis, general aviation, and the military.

For the period 1985-90, FAA aviation forecasts utilized projections of key economic variables provided by the Executive Office of the President, Office of Management and Budget. For the period 1991-96, FAA aviation forecasts were based on consensus growth rates of key economic variables provided by Chase Econometrics, Data Resources, Inc., Evans Economics, Inc. and Wharton Econometric Forecasting Associates. These projections are combined with projections of aviation variables and professional judgment on the probabilities and consequences of events that affect aviation. The combination is used as input to the econometric models from which the forecasts are generated.

Harvey B. Safeer

HARVEY B. SAFEER, Director
Office of Aviation Policy and Plans

Acknowledgements

This document was prepared by the Planning Analysis Division of the FAA Office of Aviation Policy and Plans under the direction of Mr. Marvin Olson, Manager. Mr. Gene Mercer, Manager of the Forecast Branch, led the forecast development and production process. The following individuals were responsible for individual subject areas:

Commercial Air Carriers - Robert Bowles
Commuter Air Carriers - Charles Moles
General Aviation - Arnold Schwartz
Helicopters - Thomas Henry
FAA Workload Measures - Arnold Schwartz and Robert Bowles
Terminal Area Forecasts - Thomas Henry
Statistical Assistance - Virginia Price
Text Preparation - Earline Burgess

The guidance and critical reviews produced by the senior staff of the Office of Aviation Policy and Plans is gratefully acknowledged.

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CHAPTER I

EXECUTIVE SUMMARY

Chapter I

Executive Summary

By any measure, the United States National Airspace System is the busiest in the world. There are now approximately 250 commercial operators, serving over 550 airports, enplaning over 300 million passengers. In addition, there are over 200,000 aircraft traversing the Nations airways. The performance characteristics of these aircraft vary widely and the trend is toward the production of more sophisticated aircraft which will intensify the use of controlled airspace and the services which FAA provides. The continuing growth projected in these forecasts poses unique challenges for the FAA in accomplishing its statutory mission, that being "service to the Nation by providing a safe and efficient aviation system which contributes to national security and the promotion of U.S. aviation."

REVIEW OF 1984

Fiscal 1984 continued the strong aviation recovery that had begun a year earlier. Like the prior five years under deregulation, 1984 has also witnessed a number of changes in the overall structure of the commercial aviation community. These changes have placed new demands on the National Airspace System. They have caused both the old established carriers as well as the new users of the Nation's Airspace to reevaluate their past methods of conducting day-to-day operations. Relationships that had existed between competitive airlines, between airline management and labor, between airlines and aircraft manufacturers, and between airlines and Government are all being reassessed in light of the new demands of the marketplace.

At the end of fiscal 1984, there were 49 certificated airlines engaged in scheduled domestic air service. Of this total, 29 were carriers that had been certificated since deregulation. In fiscal 1984, those carriers certificated since deregulation accounted for 12.0 percent of scheduled domestic revenue passenger miles, 16.7 percent of domestic enplanements, and 19.6 percent of domestic departures. These numbers, in part, reflect the impact that dereguilation has had on the commercial aviation industry.

After incurring operating losses totaling $1.6 billion during the four year period 1980 to 1983, U.S. certificated air carriers earned a record $2.0 billion operating profit in fiscal 1984. The financial turnaround in 1984 can be attributed to a number of factors. Domestic passenger yields increased almost 10.0 percent following the intense price competition and fare wars so prevalent throughout 1982 and much of 1983. Wage and productivity concessions from airline employees and a third year of declining fuel costs combined to hold increases in operating expenses to a minimum. However, despite record profits, there continues to be cause for concern within the industry. In 1984, 14 carriers posted operated loses, 5 carriers filed for Chapter 11 bankruptcy, and 4 carriers earned almost 70 percent of total industry profits. We expect the overall structure of the commercial aviation industry to continue to change for some years to come.

During 1984 the commuter airline industry continued to exhibit the strong rates of growth it has shown since 1969. Revenue passenger enplanements were up 14.3 percent and revenue passenger miles grew by 16.7 percent.

The general aviation industry appears to be undergoing substantial structural changes. Shipments of general aviation aircraft declined for a sixth consecutive year in 1984. Concurrently, general aviation aircraft prices and operating costs have been increasing faster than the rate of inflation. During this period, we have also witnessed the significant growth of ultralight sales, vehicles which provide a relatively low cost alternative for recreational flying in conventional aircraft. Additional evidence which shows that general aviation growth may be moderating is the continuing decline in the numbers of student and private pilots. Ultimately, the shrinking stock of pilots and the slowing in the expansion of the active fleet will reduce the rate of growth of activity at FAA facilities.

ECONOMIC FORECASTS

The forecast presented herein are based on improved models of general aviation and air carrier activities and on forecasts of economic variables as contained in the table below.

FAA FORECAST ECONOMIC ASSUMPTIONS
(Fiscal Years)

Economic Variables	Historical			Forecast			Percent Average Annual Growth				
	1980	1983	1984	1985	1986	1996	80/83	83/84	84/85	85/86	84/96
Gross National Produce (Billions 1972$)	1,477.8	1,511.2	1,616.9	1,681.3	1,748.5	2,410.5	0.7	7.0	4.0	4.0	3.4
Consumer Price Index (1967=100)	239.8	295.3	304.9	317.0	330.7	529.4	7.2	3.3	4.0	4.3	4.7
Oil & Gas Deflator (1972=100)	322.4	346.9	341.7	317.2	312.8	514.4	2.5	(1.5)	(7.2)	(1.4)	3.5

Source: 1985-90 Executive Office of the President, Office of Management and Budget

1991-96 Consensus growth rates of Chase Econometrics, Data Resources, Inc., Evans Economics, Inc., and Wharton Econometric Forecasting Associates.

The overall outlook for the forecast period is for strong economic growth, relatively stable fuel prices, and moderate inflation. Reflecting the strong U.S. economy, aviation activity is expected to exhibit relatively strong growth throughout the forecast period. This growth is consistent with forecasted long-term economic growth. In any given year there may be some perturbation from the long-term growth trend because none of the economic models are sufficiently precise to predict such turning points.

AVIATION ACTIVITY FORECASTS

Domestic air carrier revenue passenger miles are forecast to increase at an annual growth rate of 4.9 percent during the 1985-1996 time period. Domestic enplanements are forecast to increase by 4.5 percent annually during the same time period, a rate somewhat slower than passenger mile growth due to longer passenger trip lengths. Air carrier aircraft operations are forecast to increase at an annual rate of 2.0 percent over the forecast period. The high growth in revenue passenger miles and enplanements relative to operations reflects the baseline air carrier assumptions of higher load factors, larger seating capacity for air carrier aircraft, and longer passenger trip lengths.

In 1985, the commuter carriers are expected to enplane 23.7 million passengers, 6.6 percent of all fare paying passengers in scheduled domestic air service. By 1996, these carriers are expected to carry 54.2 million passengers and account for 9.3 percent of all domestic passenger enplanements. Commuter carriers are expected to continue the trend toward purchase of small jet aircraft and larger propeller driven aircraft.

AVIATION ACTIVITY FORECASTS
(Fiscal Years)

Aviation Activity	Historical			Forecast			Percent Average Annual Growth				
	1980	1983	1984	1985	1986	1996	80/83	83/84	84/85	85/86	84/96
Air Carrier, Domestic											
Rev. Pass. Enps. (millions)	278.2	290.3	313.2	336.4	348.1	530.8	1.4	7.9	7.4	3.5	4.5
Rev. Pass. Miles (billions)	203.2	223.5	237.7	254.0	264.2	423.6	3.2	6.4	6.9	4.0	4.9
Commuter Carriers											
Rev. Pass. Enps. (millions)	13.9	20.3	23.2	23.7	26.1	54.2	13.5	14.3	2.2	10.1	7.3
Rev. Pass. Miles (billions)	1.8	2.9	3.4	3.5	3.9	9.6	18.2	16.7	1.9	12.1	9.0
Fleet											
Air Carrier	2,394	2,556	2,745	2,830	2,937	3,966	2.2	7.4	3.1	4.5	3.2
Commuter	1,313	1,421	1,531	1,659	1,733	2,413	2.7	7.7	8.4	4.5	3.9
General Aviation (thousands)	210.3	209.8	213.3	210.2	214.5	270.5	(0.1)	1.7	(1.5)	2.1	2.0
Hours Flown (millions)											
Air Carrier	6.7	6.6	7.5	7.5	7.7	10.1	(0.5)	12.5	1.2	2.3	2.6
General Aviation	41.6	36.6	35.6	36.7	38.0	51.5	(3.9)	(2.7)	3.1	3.5	3.1

Source: 1980-84 CAB, FAA DATA
1985-96 FAA Forecasts

Nationally, commuter/air taxi aircraft operations are expected to almost double their 1984 volume by 1996. The larger air carriers are expected to continue their route rationalization, although at a slower pace than exhibited during the past six years. Commuter airlines will continue to move into those markets abandoned by these carriers, performing more operations with smaller aircraft than those flown previously by the larger air carriers. In addition, the commuters are expected to continue their development of new markets in those smaller communities which show potential for supporting regularly scheduled service.

Increased business use of general aviation continues to be reflected in the changing character of the fleet. The more expensive and sophisticated turbine powered part of the fixed-wing fleet is expected to more than double between 1984 and 1996. The total fleet, 78.0 percent single engine piston aircraft in 1984, will grow by only 26.8 percent. Fixed-wing turbine powered aircraft accounted for 4.4 percent of the fleet in 1984. By 1996, the percentage will increase to 6.8 percent.

FAA WORKLOAD FORECASTS

Aviation activity at FAA facilities continues the upward growth pattern which began in 1983. The demand for FAA operational services is anticipated to increase over the forecast period as a result of continued strong growth in aviation activity. Total aircraft operations at FAA towered airports are forecast to increase to 91.9 million in 1996, a 4.1 percent annual growth rate over the 56.9 million operations achieved in 1984.

FAA WORKLOAD MEASURES
(Millions)

FAA Workload Measures	Historical			Forecast			Percent Average Annual Growth				
	1980	1983	1984	1985	1986	1996	80/83	83/84	84/85	85/86	84/96
Aircraft Operations											
Air Carrier	10.1	9.7	10.9	11.2	11.4	13.9	(1.3)	12.4	2.8	1.8	2.0
Air Taxi and Commuter	4.6	5.9	6.6	7.2	7.6	11.2	8.6	11.9	9.1	5.6	4.5
General Aviation	48.9	35.3	37.0	38.7	41.5	64.4	(8.5)	4.8	4.6	7.2	4.7
Military	2.5	2.5	2.4	2.4	2.4	2.4	-	(4.0)	-	-	-
Total	66.2	53.4	56.9	59.5	62.9	91.9	(6.1)	6.6	4.6	5.7	4.1
Instrument Operations											
Air Carrier	10.6	10.1	11.3	11.6	11.8	14.2	(1.2)	11.9	2.7	1.7	1.9
Air Taxi and Commuter	4.1	5.3	6.0	6.4	6.8	10.7	8.9	13.2	6.7	6.3	4.9
General Aviation	19.3	14.8	16.0	17.1	18.3	25.0	(7.2)	8.1	6.9	7.0	3.8
Military	4.1	3.8	4.0	4.0	4.0	4.0	(2.4)	5.3	-	-	-
Total	38.2	34.0	37.3	39.1	40.9	53.9	(3.5)	9.7	4.8	4.6	3.1
IFR Aircraft Handled											
Air Carrier	13.9	13.3	14.1	14.6	14.9	19.5	(1.4)	6.0	3.6	2.1	2.5
Air Taxi and Commuter	2.6	3.7	4.4	4.7	5.1	8.9	12.5	18.9	6.8	8.5	6.0
General Aviation	8.9	7.8	8.3	8.7	9.1	12.5	(4.0)	6.4	4.8	4.6	3.5
Military	4.7	4.6	4.9	4.8	4.8	4.9	(0.5)	6.5	(2.0)	-	(0.2)
Total	30.1	29.4	31.6	32.8	33.9	45.7	(0.6)	7.8	3.8	3.4	3.1
Flight Services											
Pilot Briefs	18.3	16.0	15.1	16.6	17.4	23.0	(4.0)	(5.6)	9.9	4.8	3.6
Flight Plans Originated	9.0	8.1	8.2	8.9	9.3	12.9	(3.3)	1.2	8.5	4.5	3.8
Aircraft Contacted	9.6	8.6	8.2	8.6	8.8	8.7	(3.4)	(4.7)	4.9	2.3	0.5
Total	64.3	56.9	54.8	59.6	62.2	80.5	(3.7)	(3.7)	8.8	4.4	3.3

Source: FY 1980-84 FAA Data
FY 1985-96 FAA Forecasts

The increased use of avionics by commuter airlines and general aviation are expected to contribute most of the growth in instrument operations at FAA towered airports. Instrument operations are forecast to increase from 37.3 million operations in 1984 to 53.9 million in 1996, a 3.1 percent annual growth rate.

The workload at the Air Route Traffic Control Centers is forecast to increase at a 3.1 percent average annual rate between 1984 and 1996. The increased demand will come primarily from commuter airlines and general aviation. Commuter aircraft handled at the Centers are projected to more than double over the next 12 years.

In summary, aviation activity is expected to continue the upturn begun in fiscal 1983 and to grow at a faster rate than the general economy. Aviation will continue to dominate all other transportation modes in the commercial intercity passenger market. Commuter airline operations and business use of general aviation are expected to experience greater growth than the larger established airlines and personal use of general aviation.

CHAPTER II

ECONOMIC ENVIRONMENT

Chapter II

Economic Environment

REVIEW OF 1984

The current economic expansion, which began in 1983, is comparable to some of the most robust recoveries of the post-war period. This recovery has been characterized by a favorable mix of rising output, declining inflation, and falling energy prices. In fiscal 1984, the second full year of economic expansion, gross national product rose $359 billion or 11.0 percent. Gross national product, adjusted for price changes, rose 7.0 percent. Consumer prices continue to increase at relatively low rates, which indicates that inflation is well under control. The consumer price index for all urban consumers rose only 3.3 percent in fiscal 1984. Increasing supplies of oil accompanied by reduced demand, mostly due to conservation and the development of alternative sources of energy, have continued to exert downward pressure on fuel prices. The oil and gas deflator declined 4.2 percent in fiscal 1983 and 1.5 percent in fiscal 1984.

Overall, 1985 should be a year of strong economic growth. Inflation is expected to remain in the moderate range as fuel prices continue to decline. Declining fuel prices, low inflation rates, and an expanding economy will all contribute to a continuation of the upturn in aviation activity begun in 1983.

FORECAST ASSUMPTIONS

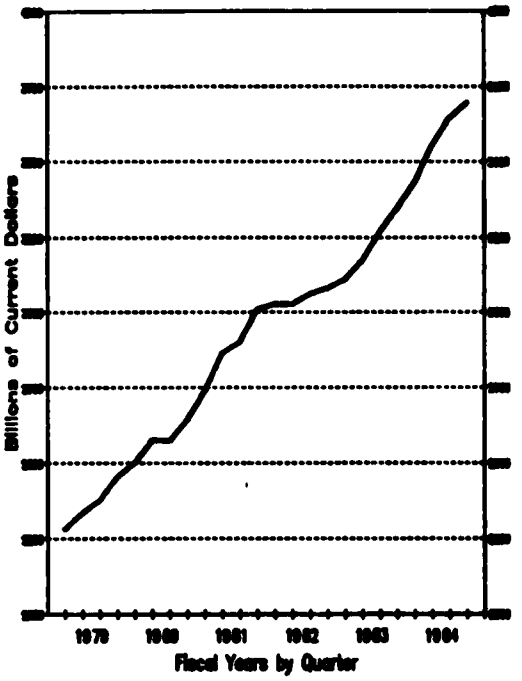
The economic scenario utilized in developing the FAA Baseline Aviation Forecasts for the period 1985-1990, was provided by the Executive Office of the President, Office of Management and Budget. For the period 1991-96, the economic scenario utilized consensus growth rates of the economic variables prepared by Chase Econometrics, Data Resources, Inc., Evans Economics, Inc., and Wharton Econometric Forecasting Associates. The data are presented in tabular form in Chapter IX. The principal series used in preparing the forecasts are presented here. Specific assumptions used in the individual models are discussed in the following pages.

FORECASTS

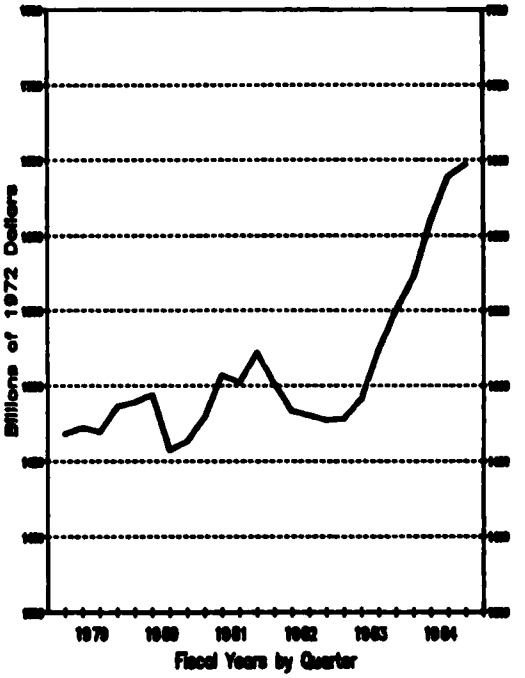
Gross national product, adjusted for price changes, is expected to grow at an annual rate of 3.4 percent throughout the forecast period, slightly above the average growth rate of 3.3 percent exhibited during the 1975-1981 period. Economic expansion is forecast to continue, with real gross national product increasing by 4.0 percent in both fiscal 1985 and 1986.

ECONOMIC TRENDS

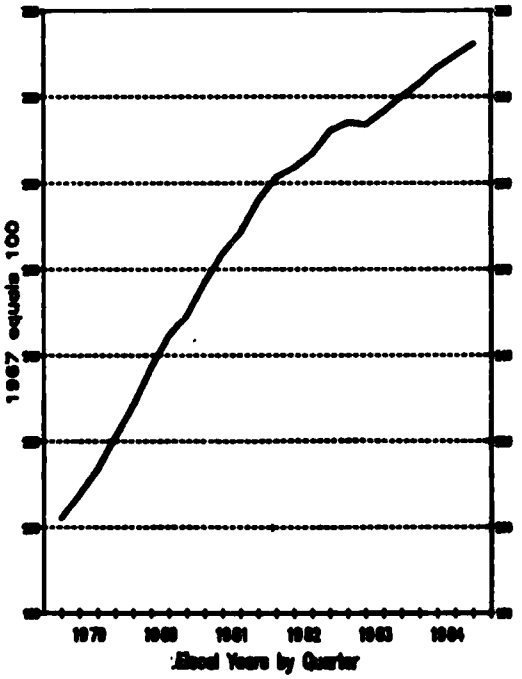
NOMINAL GNP



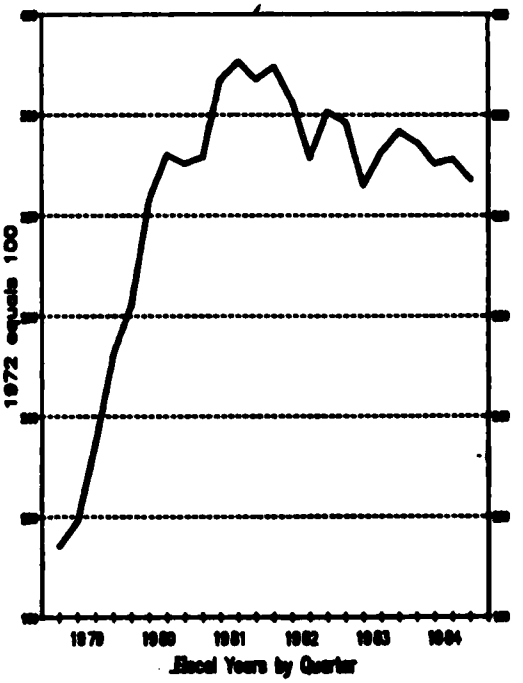
'REAL' GNP



CONSUMER PRICE INDEX



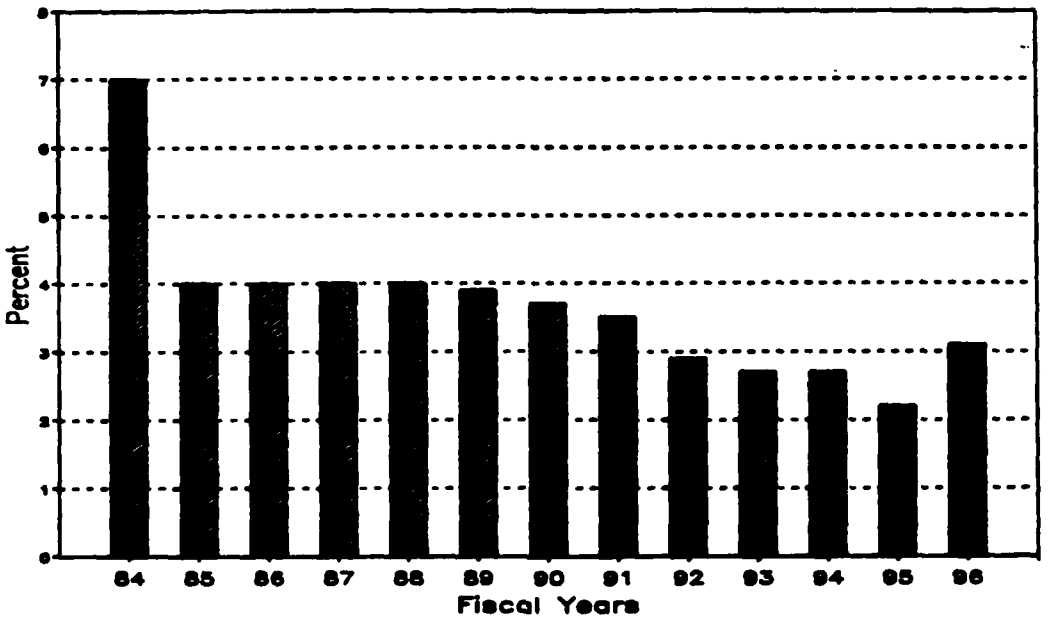
OIL AND GAS DEFLATOR



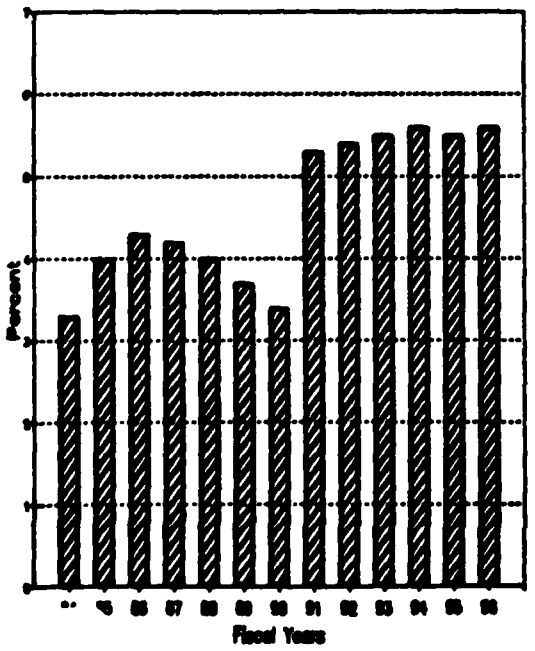
FORECASTS OF ECONOMIC VARIABLES

ANNUAL GROWTH RATES

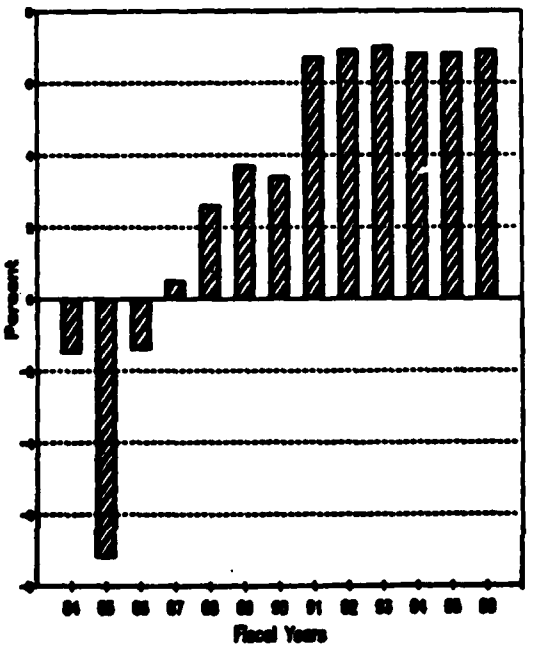
GROSS NATIONAL PRODUCT
(1972 Dollars)



CONSUMER PRICE INDEX
(1967 = 100)



OIL PRICE INDEX
(1972 = 100)



Consumer prices are expected to remain in the moderate range, increasing by an average annual rate of 4.7 percent over the forecast period. Inflation is forecast to increase by only 4.0 percent in fiscal 1985 and 4.3 percent in fiscal 1986. Fuel prices are expected to decline 7.2 percent in fiscal 1985 and 1.4 percent in fiscal 1986. Over the entire forecast period, fuel prices are predicted to increase at an annual rate of 3.5 percent, considerably lower than the forecast of the average annual inflation rate.

CHAPTER III

COMMERCIAL AIR CARRIERS

Chapter III

Commercial Air Carriers

As of November 1984, there were approximately 67 commercial airlines reporting traffic and financial data to the Civil Aeronautics Board on Form 41. Of this total, 49 were engaged in scheduled air service and, as such, represent the base on which the air carrier forecasts contained herein are formulated. A listing of commercial air carriers can be found in Appendices A and B.

REVIEW OF 1984

Financial Results

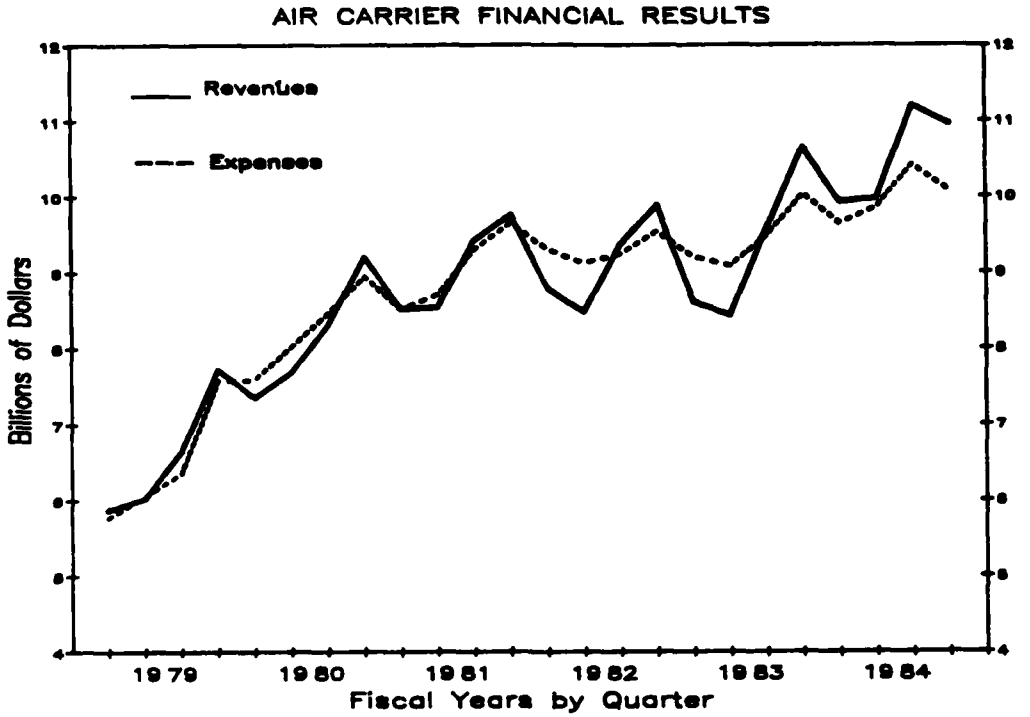
After incurring operating losses totaling almost $1.6 billion during the four year period between 1980 and 1983, U.S. certificated air carriers earned a record $2.0 billion operating profit in fiscal 1984. In fact, fourth quarter FY-84 marked the sixth consecutive profitable quarter for the industry, a period during which the industry posted operating profits in excess of $2.8 billion. Although the industry debt structure ate away most of these operating profits, the industry still managed to post a net profit of almost $900 million in fiscal 1984.

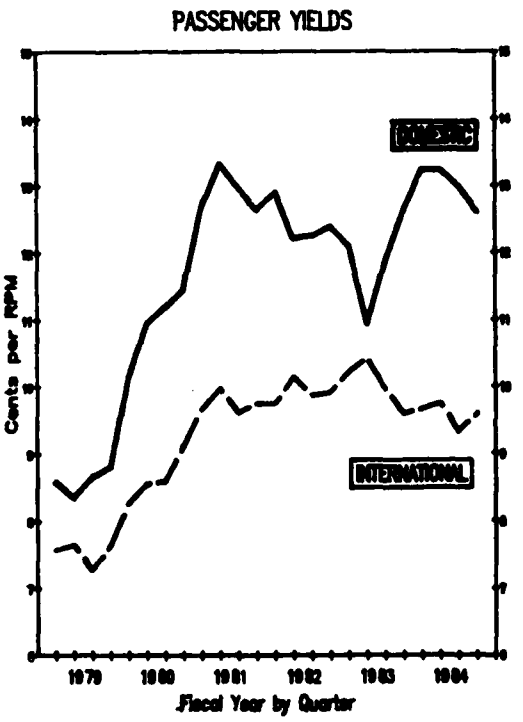
The financial turnaround in 1984 can be attributed to a number of factors. On the revenue side, improved yields, the average revenue received per passenger mile, were certainly a contributing factor. The intense price competition and fare wars that were so prevalent throughout 1982 and much of 1983 subsided somewhat in 1984, although there were signs that pointed toward a possible new outbreak of fare wars in certain markets. On a system wide basis, passenger yields increased almost 7.0 percent in 1984 and were responsible for at least half of the 12.9 percent increase in operating revenues. Domestic yields increased almost 10 percent in 1984 while international yields declined by 4.0 percent.

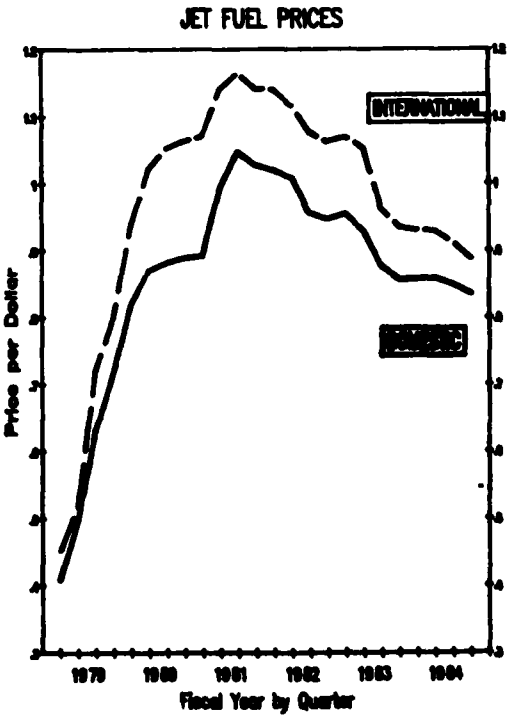
On the expense side, two factors--wage and productivity concessions from airline employees and a third consecutive year of declining jet fuel prices--combined to hold the increase in operating expenses to only 5.8 percent in 1984, this despite a 10.0 percent increase in the number of seat miles flown. In 1984, the average price paid for jet fuel declined by 6.3 percent, 5.8 percent in domestic markets and 8.5 percent in international markets.

Despite record profits in 1984, there continues to be cause for concern within the industry. In 1984, 14 carriers posted operating losses, 5 carriers--Air Florida, Air One, American International, Capitol and Wien Air Alaska--filed for bankruptcy under Chapter II, and 4 carriers--American, Delta, United and U.S. Air--earned operating profits of $1.4 billion, almost 70 percent of total industry profits. These facts point out the fact that tremendous differences continue to exist among the various air carriers with regard to their financial condition.

AIR CARRIER REVENUE AND COST TRENDS

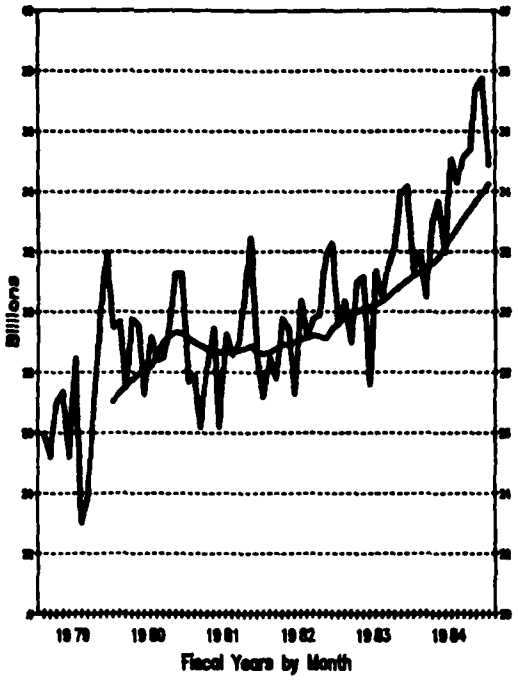




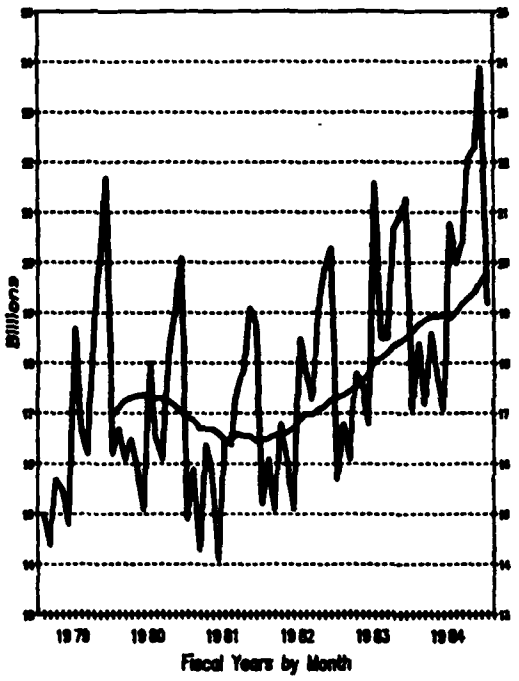


AIR CARRIER CAPACITY AND TRAFFIC TRENDS

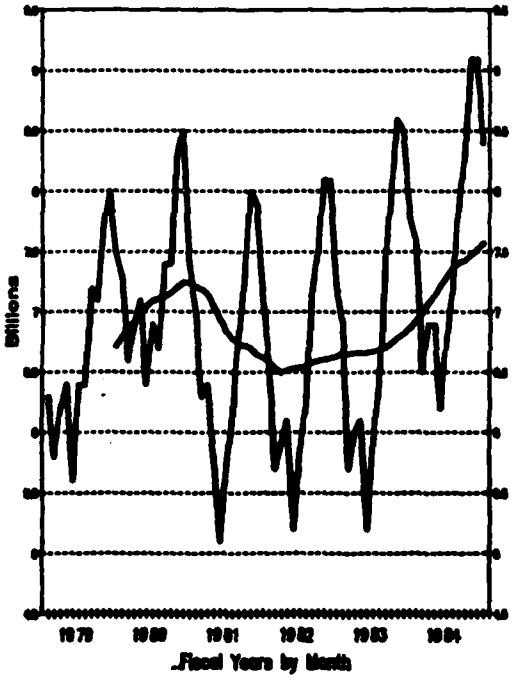
DOMESTIC ASMS



DOMESTIC RPMS



INTERNATIONAL ASMS



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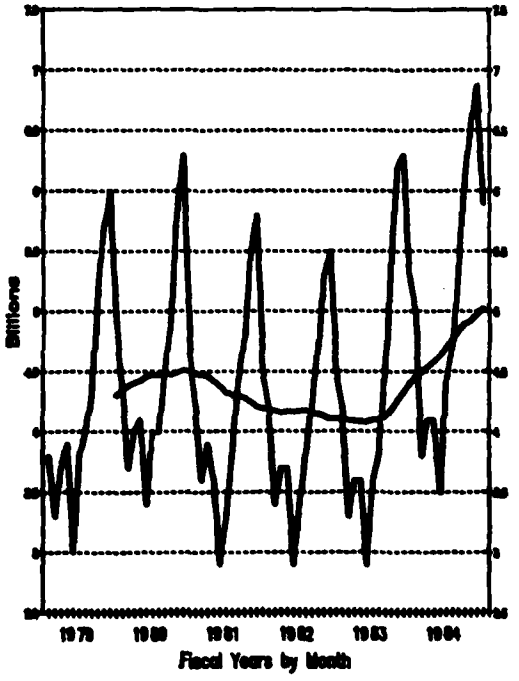


Traffic and Capacity

Passenger traffic on U.S. commercial air carriers increased for a third consecutive year in fiscal 1984, with revenue passenger miles increasing by 7.8 percent and enplanements by 8.0 percent. The strength of the U.S. economy was largely responsible for a 6.4 percent increase in domestic revenue passenger miles and a 7.9 percent increase in domestic enplanements, this growth occurring despite a 9.2 percent increase in domestic passenger yields. In international markets, the combination of a strong U.S. dollar abroad and declining passenger yields led to a 14.0 percent increase in revenue passenger miles and a 10.0 percent increase in passenger enplanements. The largest increase in international traffic occurred in the Pacific and Atlantic markets, which grew by 17.2 and 15.5 percent, respectively. Latin American markets increased by only 2.8 percent in 1984.

Available seat miles flown by U.S. commercial air carriers increased by 9.9 percent in fiscal 1984, the largest single year growth since 1979, the first year of deregulation. Domestic seat miles increased by 9.8 percent and international seat miles by 10.0 percent. As a result of these capacity increases, the system load factor declined 1.2 points to 59.3 percent and the domestic load factor declined 1.9 points to 57.8 percent. In addition, these large capacity increases led to severe congestion and delay problems at many air carrier airports, making it necessary for the FAA to impose hourly slot limits at six major air carrier airports. International load factors increased 2.3 points to 66.2 percent in fiscal 1984.

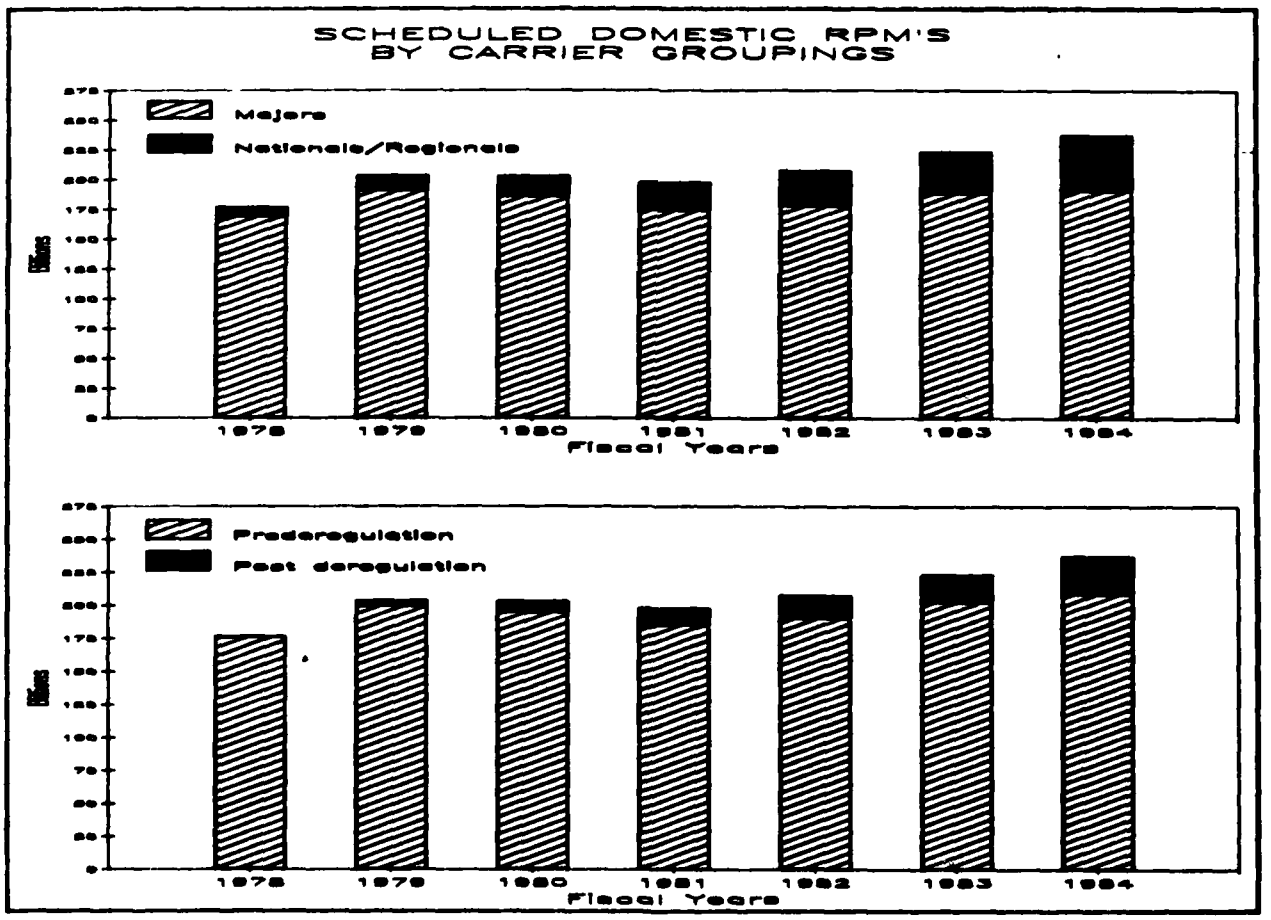
Industry Composition

At the end of fiscal 1984, there were approximately 47 certificated airlines engaged in scheduled domestic air service. Of this total, 21 were carriers that had been certificated prior to deregulation (Prederegulation carriers) and 26 were carriers that had been certificated since deregulation (Post deregulation carriers). Prior to deregulation, carriers were designated as either Trunks or Local Service carriers. Today, carriers are designated as either Majors, Nationals, Large Regionals, or Medium Regionals, the carrier groupings based upon annual operating revenues.* However, as carriers grow in size they move from one carrier grouping to another and, as such, comparing growth rates of the various carrier groupings becomes rather meaningless. In fiscal 1984, Midway, New York Air and People Express, accounting for almost 3 percent of system traffic, moved from Large Regional to National carrier designation. Based upon projected 1984 revenues, there are likely to be several other moves between carrier groupings. As such we have combined the National and Regional carriers into one grouping and the discussion that follows will compare the following carrier groupings: Majors versus Nationals/Regionals and Prederegulation versus Post deregulation carriers.

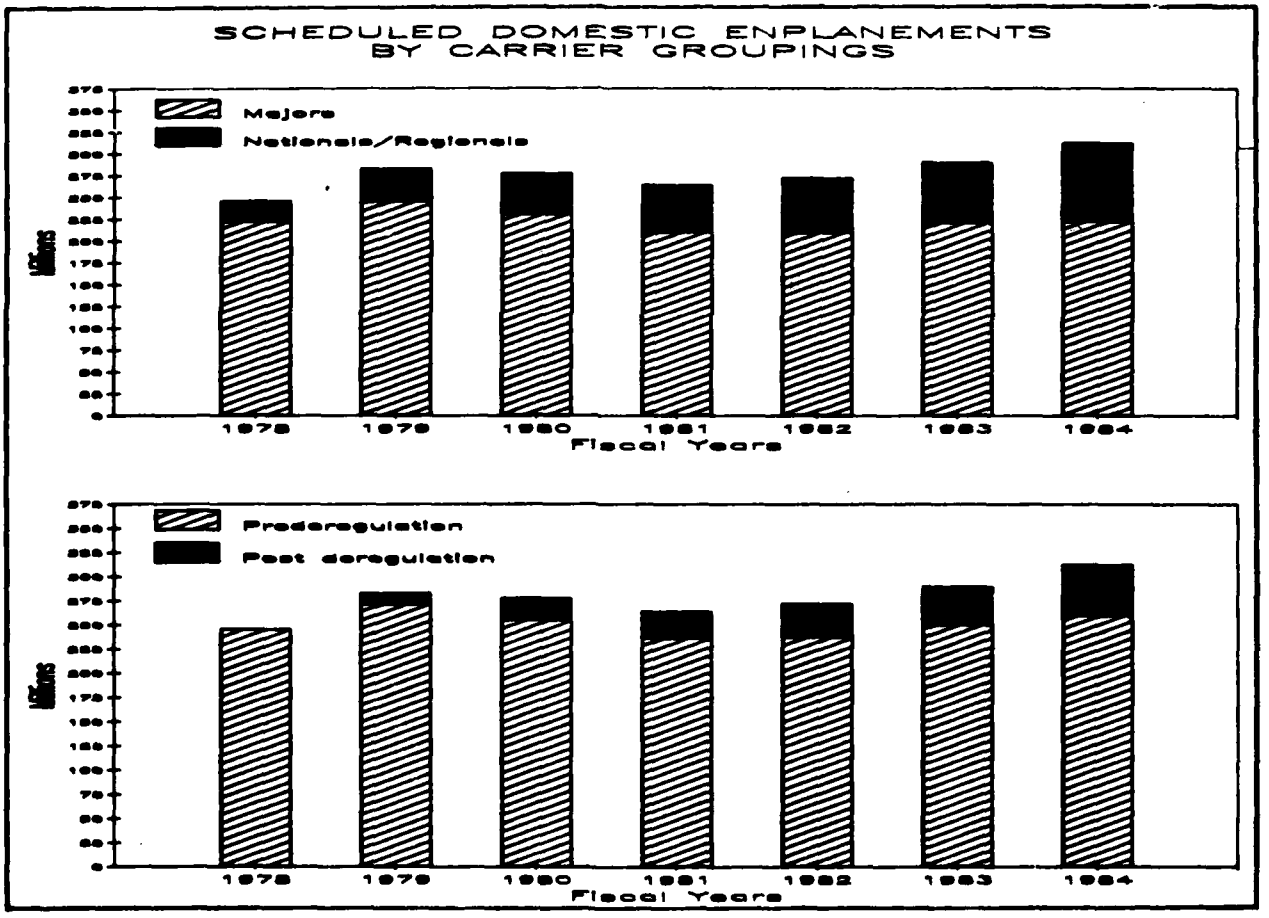
* A list of the carriers included in each grouping can be found in Appendix A.

The composition of the domestic carrier industry has changed markedly in the six years since deregulation. The Majors still dominate the industry, but their share of passenger miles, passenger enplanements and departures have declined significantly. In 1978, the Majors accounted for 96.0 percent of total scheduled domestic revenue passenger miles. Six years later, their share had fallen to 80.5 percent while the Nationals/Regionals' share had increased from 4.0 to 19.5 percent. Much of this share loss can be attributed to those carriers certificated since deregulation who, in fiscal 1984, accounted for 12.0 percent of scheduled domestic passenger miles.

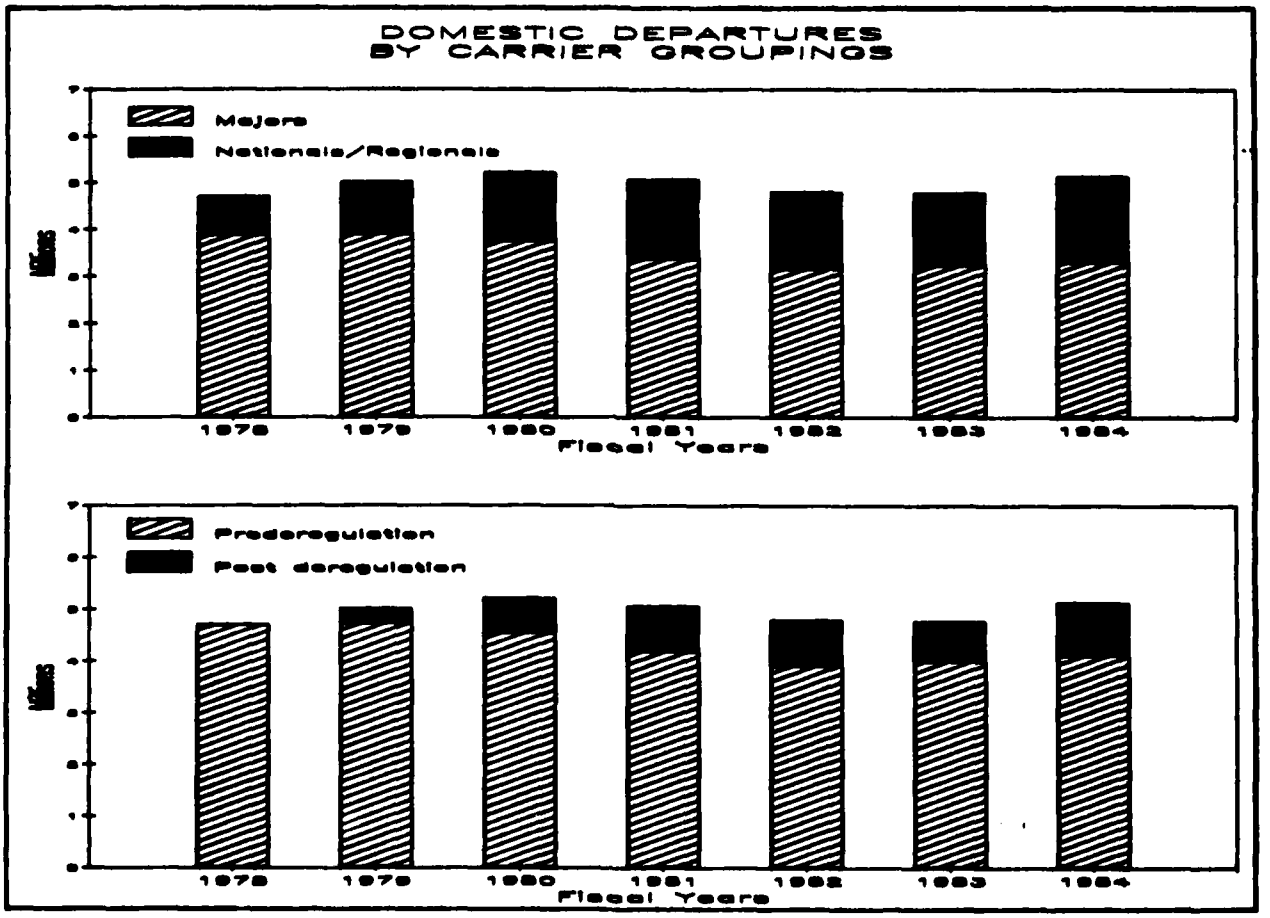
In the six years since deregulation, the Majors' revenue passenger miles have increased by 12.7 percent and the Nationals/Regionals by 552.9 percent. Passenger mile growth in 1984 was 1.0 percent for the Majors and 36.1 percent for the Nationals/Regionals. Passenger miles for those carriers certificated prior to deregulation have increased by 18.3 percent since 1978, 3.0 percent in 1984. The post deregulation carriers' passenger miles have increased by 738.2 percent since 1979, 39.7 percent in 1984.



Between 1978 and 1984, the Majors' share of scheduled domestic enplanements has declined by more than 19 points, from 90.7 percent to 71.6 percent. A large part of this share loss is due to the fact that post deregulation carriers accounted for 16.7 percent of all passenger enplanements in 1984. Over the past six years, the Majors' domestic enplanements have increased by only 0.2 percent, 1.0 percent in 1984. The Nationals/Regionals' enplanements increased by 289.1 percent between 1978 and 1984, 29.5 percent in fiscal 1984. Since 1978, prederegulation carriers' enplanements grew by 5.8 percent, 3.7 percent in 1984. Post deregulation carriers' enplanements have increased by 376 percent since 1979, 33.3 percent in 1984.



The Majors' share of scheduled domestic departures has declined by more than 20 percentage points since 1978, from 85 percent to 64.7 percent. All of this share loss is attributable to those carriers certificated since 1978, who in 1984 accounted for 19.6 percent of domestic departures. In terms of actual departures, the Majors performed 14.8 percent fewer departures in 1984 than they had in 1978. During the same time period, however, the number of departures performed by the Nationals/Regionals increased by 124.2 percent. Prederegulation carrier departures declined by 12.4 percent since 1978 while the post deregulation carriers have increased their departures by 264.3 percent since 1979.



These shifts in the distribution and absolute number of passenger miles, passenger enplanements, and departures discussed above reflect, to some extent, the impacts that the entry of new carriers and deregulation have had on the larger established air carriers.

The six years since deregulation have also witnessed dramatic changes in the average trip length and aircraft size flown by each of the carrier groupings. Between 1978 and 1984, the Majors increased their passenger trip length from 759 miles to 854 miles, an increase of 95 miles. The Nationals/Regionals increased their trip length by 215 miles, from 306 miles in 1978 to 521 miles in 1984. In fiscal 1984, the post deregulation carriers had an average trip length of 544 miles, 235 miles longer than their 1979 trip length of 309 miles.

Between 1978 and 1984, the Majors' average aircraft size increased from 141 seats to 162 seats. During this same time period, the Nationals/Regionals' average aircraft size increased by 55 seats, from 70 seats to 125 seats. The post deregulation carriers average aircraft size increased from 66 seats in 1979 to 133 seats in 1984. For the most part, these shifts in trip length and aircraft size reflect the different approaches to which the respective carrier groups have responded to changes in the economy and the market entry and exit freedom. These shifts also reflect the carriers' attempts to best utilize their fleets in the most fuel efficient and profitable manners.

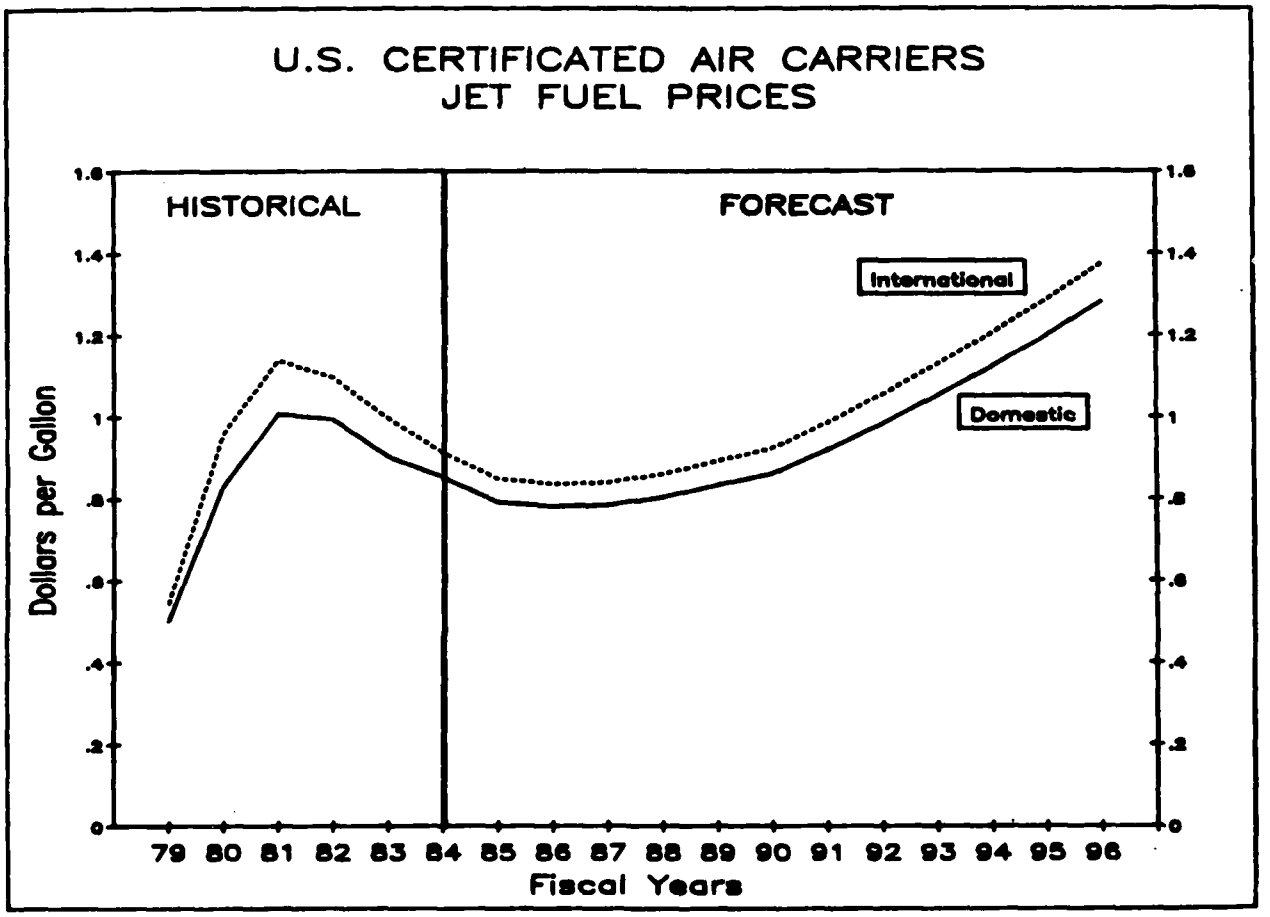
FORECAST ASSUMPTIONS

The baseline forecasts of air carrier traffic and activity over the next 12 years anticipate that the industry will continue to be affected by the deregulation process for at least several more years. While it is impossible to foresee all the changes that will occur in the commercial aviation industry in the years ahead, it is likely that there will be additional mergers, that we will see the emergence of a number of low-cost airlines, and that several carriers will cease operations. On the other hand, the resultant route systems and service patterns available to the traveling public will almost certainly reflect a better balance of service in terms of trip frequencies and fares than would be the case under a more closely regulated system. The carriers will also be able to continue their experimentation with innovative ways of developing travel markets. Likewise, the carriers will be able to come closer to utilizing their particular aircraft fleets in the most fuel efficient and profitable manner.

Fuel Prices

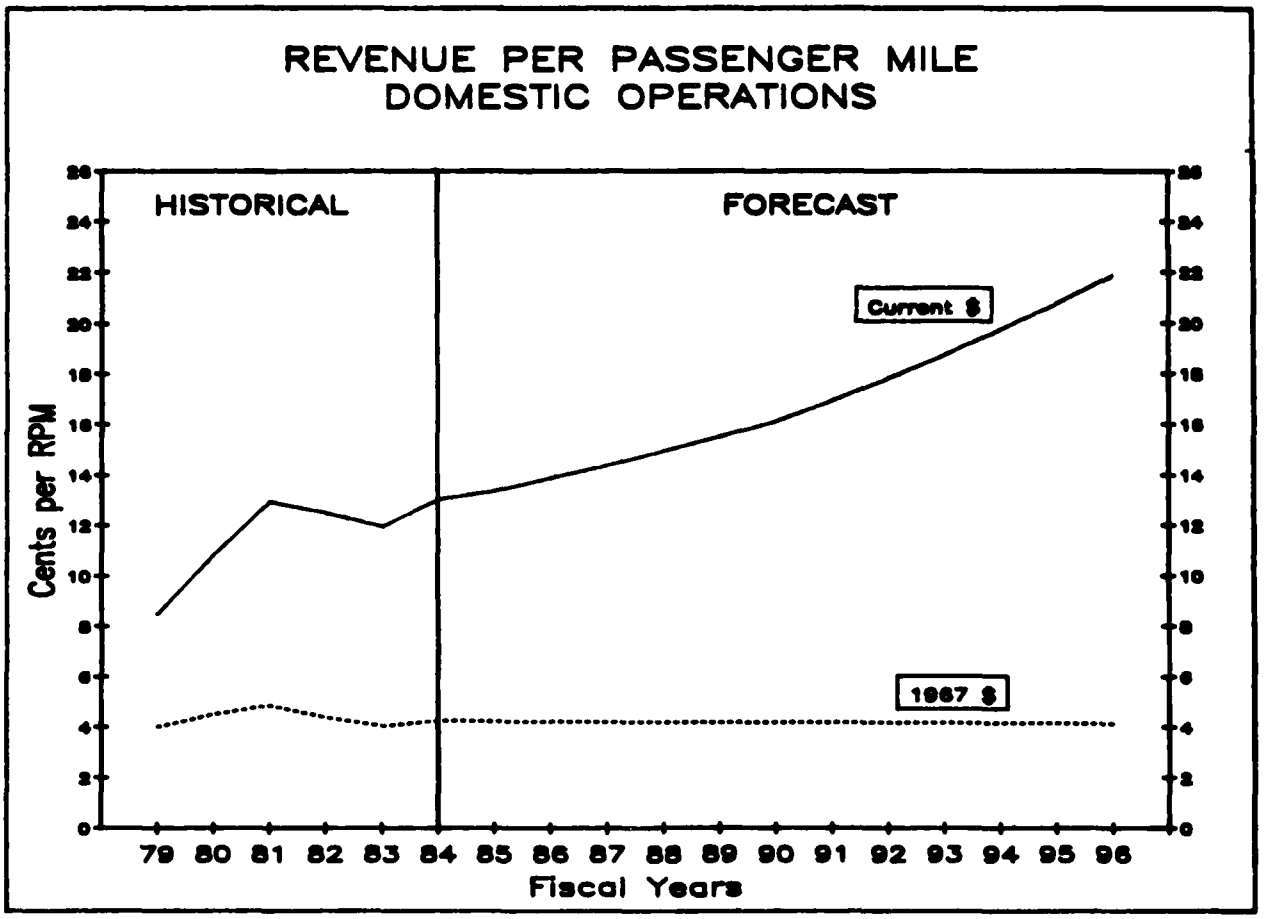
Between 1978 and 1981, the air carrier industry was subjected to a 153 percent increase in the price of jet fuel, rising to a peak of $1.052 domestic and $1.168 international in May 1981. However, an oversupply of oil, caused in part by a worldwide recession and in part by successful worldwide conservation efforts, successfully reduced the demand for oil. This resulted in lower prices for all petroleum products, including jet fuel. Although U.S. air carrier fuel consumption increased by almost 10 percent in fiscal 1984, jet fuel prices declined for a third consecutive year. As of October 1984, domestic jet fuel prices had declined 20.7 percent from the May 1981 peak price to 83.4 cents per gallon. International jet fuel prices declined 25.1 percent to 87.5 cents per gallon.

Jet fuel prices are not projected to resume an upward trend until 1987, declining by 7.2 percent in 1985 and 1.4 percent in 1986. In fact, domestic jet fuel prices are not expected to exceed $1.00 a gallon until 1993, international fuel prices in 1992. Over the entire forecast period, domestic jet fuel prices are expected to increase at an average annual rate of 3.5 percent, to $1.281 per gallon in 1996. International fuel prices are forecast to rise to $1.374 in 1996.



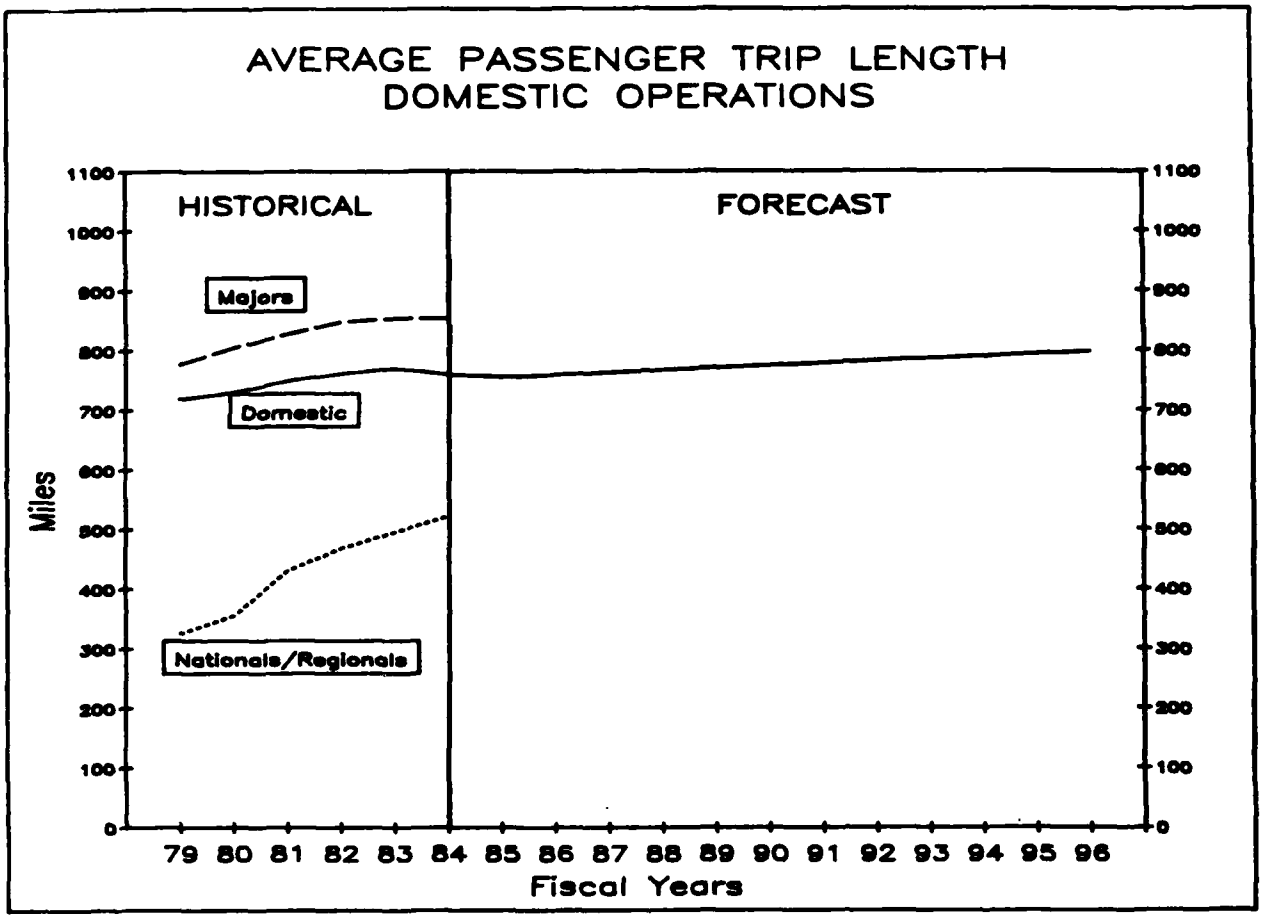
Passenger Yields

After declining by almost 8.0 percent between 1981 and 1983, domestic passenger yields increased by 9.2 percent in fiscal 1984, 5.7 percent in 'real' terms. Although yields did decline somewhat in fourth quarter FY-84, the forecast assumes moderate yield increases of 2.5 percent in 1985 and 3.9 percent in 1986. For the 12 year forecast period, it is anticipated that the yield will increase at a 4.4 percent annual growth rate, from 13.0 cents in 1984 to 21.85 cents in 1996. In 'real' dollars, domestic passenger yields are expected to decline by 3.1 percent between 1984 and 1996, from 4.26 cents to 4.13 cents. The decline in 'real' yield is based on the assumptions of further system optimization, greater market competition from new low-cost carriers, and the continued replacement of older aircraft with the new, larger more fuel efficient aircraft with lower unit operating costs than today's aircraft.



Passenger Trip Length

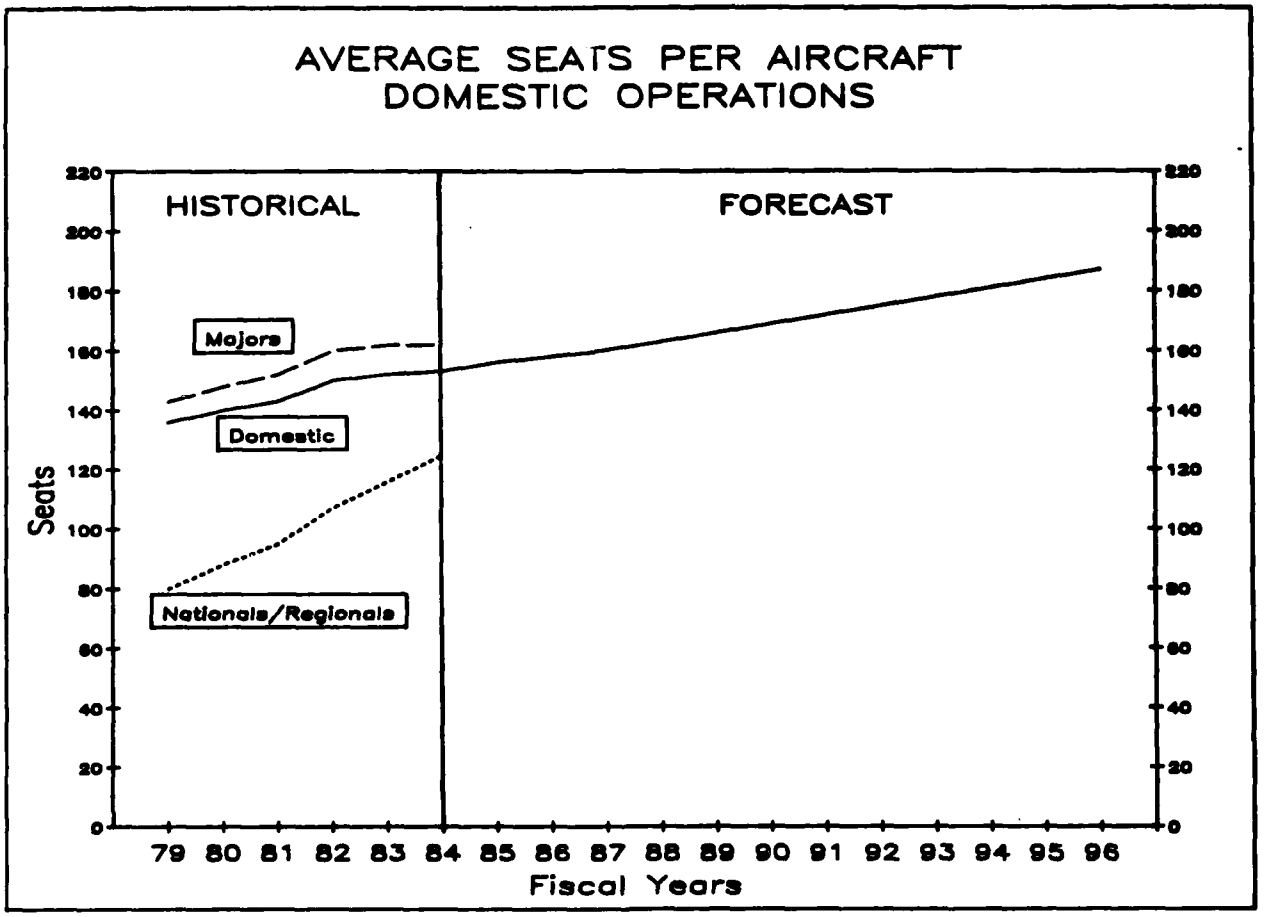
Between 1979 and 1983, the average domestic passenger trip length, reflecting the impact of deregulation and lower fares in many of the longer haul markets, increased by 53 miles, considerably faster than the long-term historical trend. However, in fiscal 1984 the average trip length declined 11 miles to 759 miles, the first such decline since 1974, when fuel shortages stimulated traffic in short-haul business markets. This decline reflects both the increased fare levels prevalent throughout much of 1984 and the fact that the shorter trip length Nationals/Regionals' share of overall traffic increased significantly in 1984. Based upon the long-term historical trend, we believe that the average trip length is still higher than it should be and, as such, have forecast another 4 mile decline in 1985. Thereafter, we expect the average trip length to resume the long-term historical growth rate of 4 miles a year, increasing from 755 miles in 1985 to 798 miles in 1996.



The international passenger trip length in fiscal 1984 was 2,595 miles. We expect the international trip length to decline to 2551 miles in 1985 and then increase gradually to 2,602 miles in 1996.

Average Aircraft Size

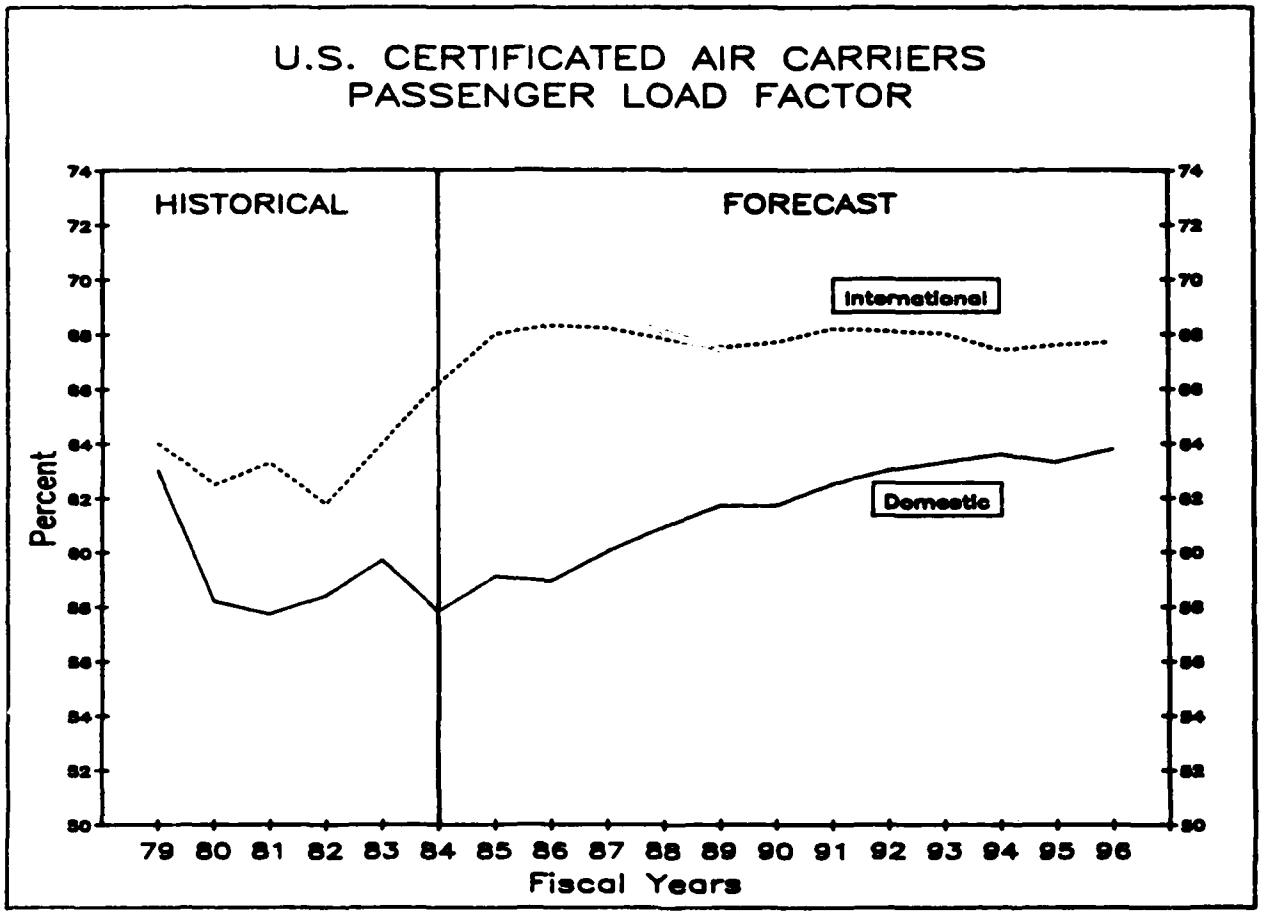
Declining fuel prices have, to some extent, slowed the trend toward the replacement of older aircraft with larger capacity and more fuel efficient aircraft. In addition, the continued high levels of intense competition from new low-cost carriers has increased the importance of higher frequencies and the demand for efficient aircraft with smaller capacities. As such, the domestic industry's average seating capacity increased by less than 1 seat in fiscal 1984, to 153.2 seats. We expect the average aircraft size to continue to grow, although at a rate somewhat less than the average long-term historical trend of three to four seats per year, In 1996, the average seat size of the domestic fleet is expected to be 187 seats.



In fiscal 1984, the average seating capacity on aircraft utilized in international service was 267. We expect the average aircraft size to also grow by two to three seats annually, averaging 295 seats in 1996.

Load Factor

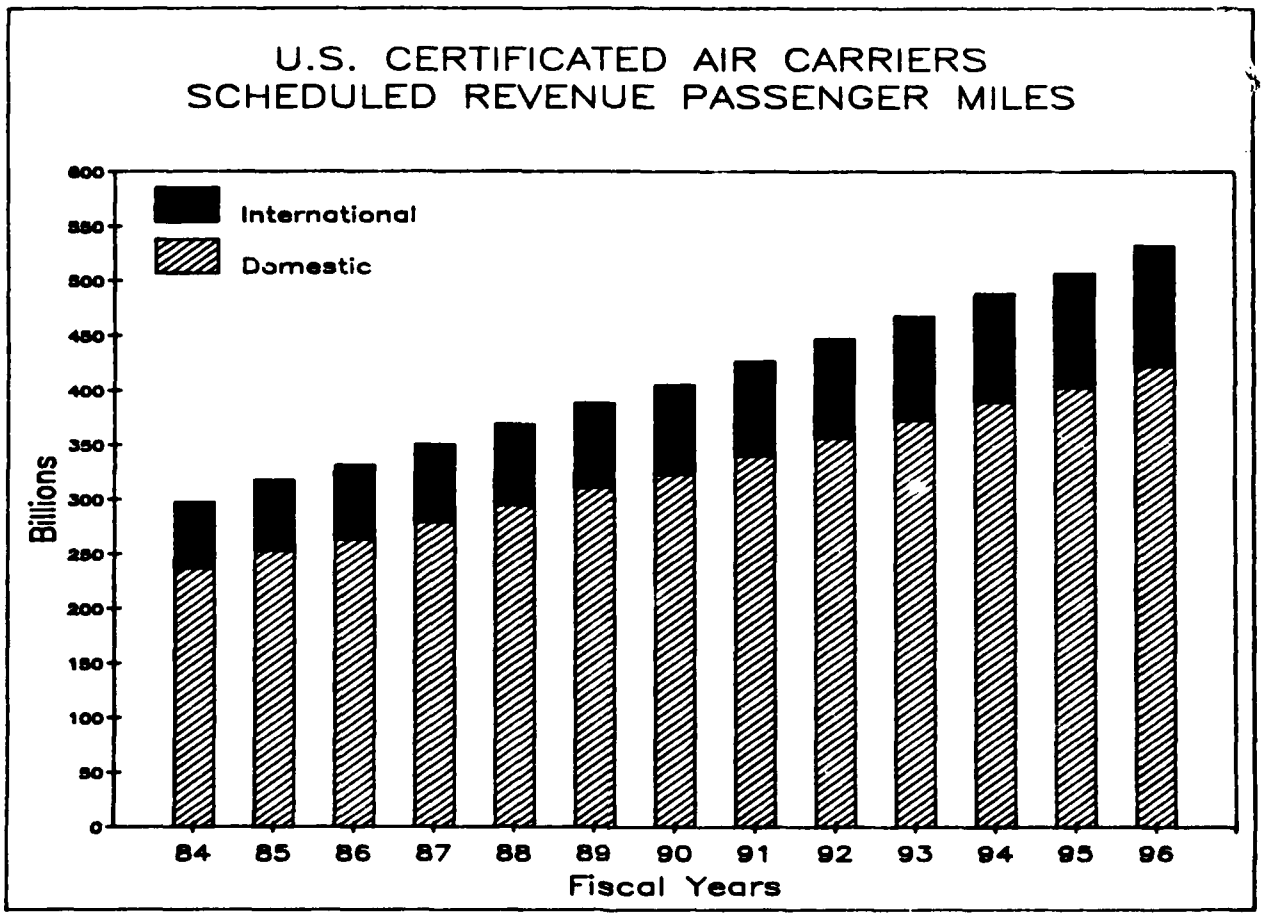
In fiscal 1984, the domestic load factor declined 1.9 points to 57.8 percent while the international load factor increased 2.2 points to 66.1 percent. Based upon projected levels of capacity and traffic, the domestic load factor is expected to increase to 59.1 percent in 1985 and then decline slightly to 58.9 percent in 1986. Thereafter, the load factor is expected to continue to rise gradually, reaching a peak of 63.8 percent in 1996. International load factors are expected to increase to 68.0 percent in 1985 and to remain in the 67.4 to 68.3 percent range throughout the entire forecast period.



FORECASTS

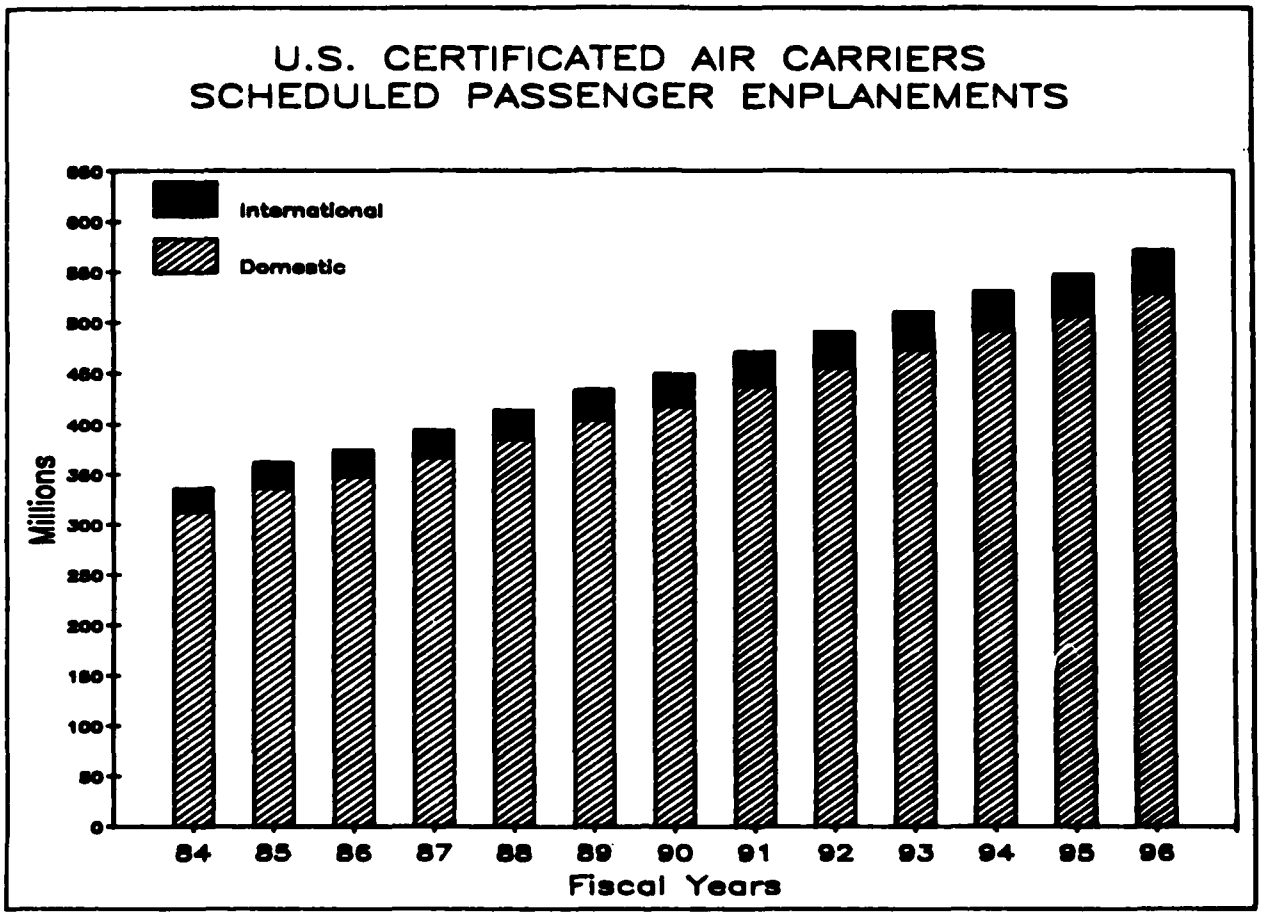
Revenue Passenger Miles

U.S. certificated air carrier revenue passenger miles totaled 297.9 billion in fiscal 1984, 237.7 billion in domestic markets and 60.2 billion in international markets. Domestic passenger miles are forecast to increase 6.9 percent in 1985, 4.0 percent in 1986, and 5.9 percent in 1987. Over the next twelve years, domestic passenger miles are forecast to increase at an average rate of 4.9 percent annually, to 423.6 billion in 1996. International passenger miles, reflecting a continuation of a strong dollar abroad, are projected to increase by 6.8 percent in 1985. Over the entire forecast period, international passenger miles are forecast to increase at an average annual growth rate of 5.1 percent, to 109.3 billion in 1996.



Passenger Enplanements

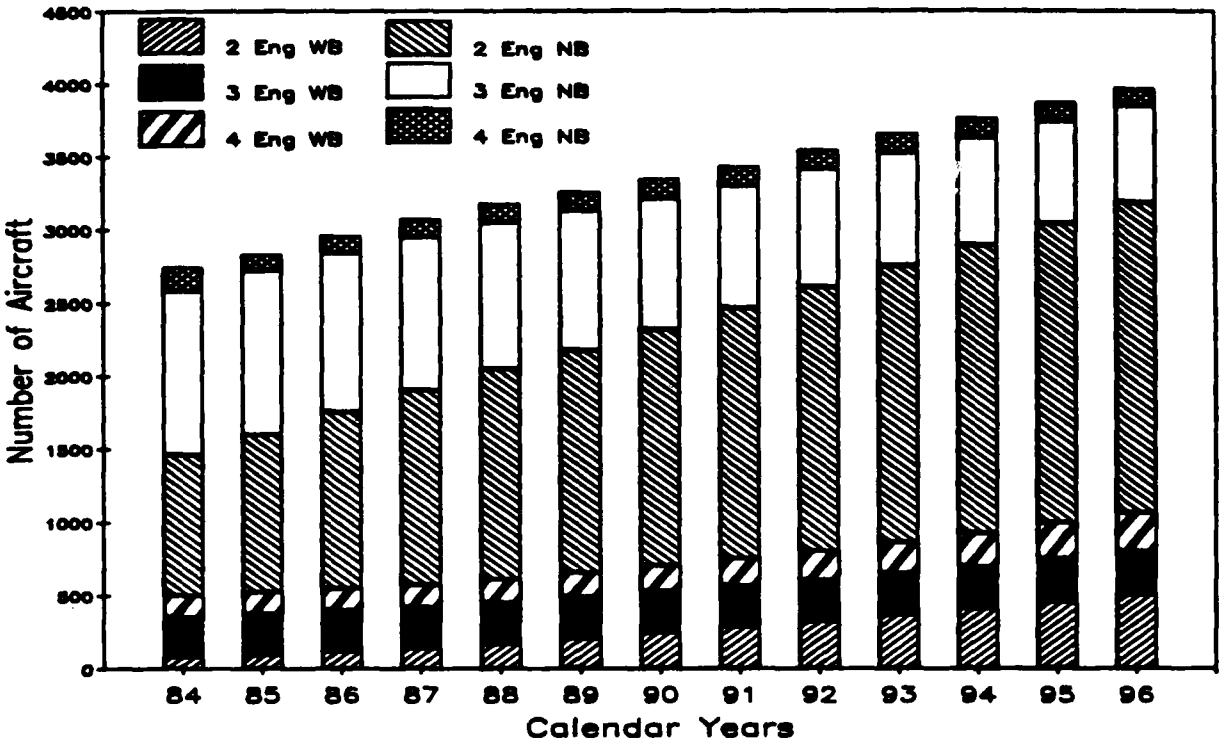
In fiscal 1984, U.S. certificated airlines enplaned 336.4 million passengers. Domestic travel accounted for 313.2 million enplanements while international travel accounted for another 23.2 million enplanements. Domestic enplanements are forecast to increase 7.4 percent in 1985, 3.5 percent in 1986, and 4.5 percent annually throughout the entire forecast period, totaling 530.8 million in 1996. International enplanements are expected to increase at an average annual rate of 5.0 between 1984 and 1996, to 42.0 million in 1996.



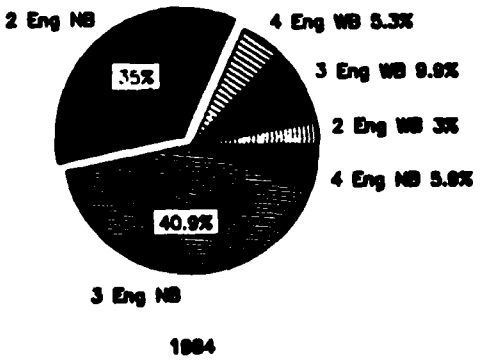
Air Carrier Fleet

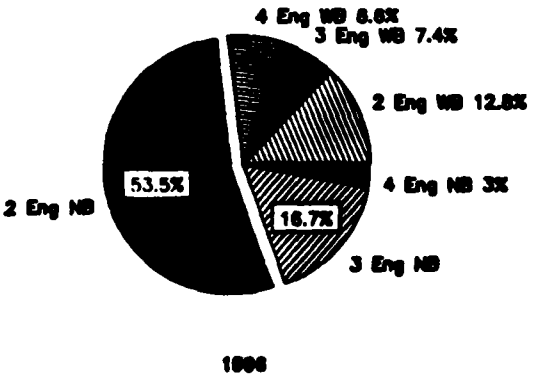
Based upon the projections of air carrier traffic, seat capacity and load factor, the U.S. commercial air carrier fleet is forecast to increase from 2,745 large jet aircraft in 1984, to 3,966 aircraft in 1996, an average increase of 3.1 percent or 102 aircraft annually. By far the largest growth occurs in two-engine aircraft, with two-engine narrow-body aircraft (DC-9, B-737, B-757) growing by an average of 97 aircraft annually. In 1996, two-engine narrow-body aircraft will account for 53.5 percent of the total fleet, up from 35.0 percent in 1984. This reflects the fact that the prospects for continued levels of intense competition increases the importance of higher frequencies; thus, the demand for aircraft with smaller capacities than needed before deregulation. Two-engine wide-body aircraft (A-300, B-767) are expected to increase by an average of 35 aircraft annually. The three-engine narrow-body (B-727) and four engine narrow-body (B-707, DC-8) aircraft are expected to decline in absolure number over the forecast period. Wide-body aircraft, which accounted for only 18.2 percent of the fleet in 1984, are expected to account for almost 26.8 percent of the fleet in 1996.

TOTAL LARGE JET AIRCRAFT IN U.S. COMMERCIAL AIRLINE SERVICE



PERCENT BY AIRCRAFT TYPE





CHAPTER IV

COMMUTERS

Chapter IV

Commuters

In September 1984 there were approximately 175 commuter airlines reporting to the Civil Aeronautics Board (CAB) on Form 298-C. The FAA historical commuter data base includes activity for all carriers operating in the 48 contiguous states, Hawaii, Puerto Rico, and the U.S. Virgin Islands. Excluded from the FAA data base is commuter activity in Alaska and foreign territories. Although included in the historical data base, Air Wisconsin and Empire Airlines have been excluded from the commuter forecasts because of the predominance of jet aircraft in their fleets.

REVIEW OF 1984

During fiscal 1984, the commuter airlines continued to exhibit the same strong growth it has shown over time. Revenue passenger enplanements increased by 14.3 percent to 23.2 million while revenue passenger miles increased by 16.8 percent to 3.4 billion. Passenger enplanements in the 48 states grew by 14.0 percent while revenue passenger miles grew by 16.8 percent. Traffic for Hawaii, Puerto Rico, and the Virgin Islands also posted significant increases with enplanements up 16.0 percent and revenue passenger miles up 16.2 percent. Hawaiian enplanements and passenger miles grew by 13.3 and 19.8 percent, respectively. Puerto Rico/Virgin Islands enplanements grew by 20.0 percent and revenue passenger miles by 6.2 percent.

Historically, traffic in Alaska and foreign territories has accounted for approximately 3.5 percent of all commuter enplanements. In 1984, U.S. commuter enplanements in foreign territories and Alaska totaled just over 700,000, up 20.4 percent over 1983.

RECOGNITION AND GROWTH

Formal recognition of a developing third level airline industry and coining of the term "commuter" date back to 1969 when commuter airlines were first required to register with and report activity data to the CAB. Growth of the commuter industry can be attributed in large part to the role it plays as a feeder of traffic to the larger certificated airlines. The significance of this role is reflected in the growth of the number of communities served exclusively by commuters, and the increasing size and sophistication of aircraft operated by commuter airlines. The maximum number of seats allowed without special exemption has increased from 19 seats in 1969 to 30 seats in 1972, to 56 seats by the Airline Deregulation Act of 1978, and later to 60 seats by CAB regulatory action.

Probably the most significant factor underlying the growth of commuters was the conversion to large turbojet aircraft by the large certificated carriers. The cost of operating the large turbojets aircraft was such that traffic at small communities proved insufficient to justify regular scheduled service. Airline deregulation has accelerated this process with the larger certificated air carriers preferring to concentrate on the high density, medium and long-haul markets, markets in which their larger aircraft are best suited.

As the large certificated air carriers embarked on programs to rationalize their route structures and increase their aircraft utilization and fuel efficiency, the commuters moved into those markets abandoned by the larger carriers. In most cases where commuter replacement service has occurred, the affected communities are offered far greater schedule frequency than the certificated air carriers could afford, given their large aircraft and the low passenger density of the markets. In many markets, demand has substantially increased as a result of the greater schedule frequency.

Given the early restrictions on the size of aircraft they were allowed to operate, the commuters were restricted to the use of general aviation aircraft, most with 9 seats or less. These seat restrictions, and the resultant type of aircraft operated, hampered both the commuters' ability to attract surface passengers and the quality of service provided. The restrictions also eliminated any incentive for manufacturers to design and build aircraft particularly suited to commuter service. As the seat restrictions were relaxed, there has been a growing trend toward utilization of larger turboprop aircraft by commuter carriers.

Today, manufacturers in the United States, and more significantly in other countries, are delivering aircraft designed to more efficiently serve commuter markets. These larger aircraft are proving to be attractive to travellers accustomed to the amenities of air carrier jets, and thus contribute to greater public acceptance vis-a-vis other modes of transportation. With the move to larger aircraft and greatly expanded route structures, many of today's commuter carriers resemble the local service carriers of an earlier day.

INDUSTRY COMPOSITION

The commuter airline industry developed and grew in an unregulated environment. This regulatory freedom allowed the commuter airlines to enter markets, terminate service and set rates without costly regulatory proceedings, thus allowing them the flexibility to experiment and respond to existing market conditions. Given this freedom of entry and exit from the marketplace, there have been, at one time or another, almost 600 different commuters who have reported passenger traffic to the CAB during the 1970 to 1984 time period.

As of September 1984, there were approximately 175 commuters reporting to the CAB, compared to a high of about 250 in 1981. Given the large number of commuters that have operated since 1970, and the fact that the most that ever reported in any one year was about 250, one is left with the impression of a highly volatile industry. During this time period there were almost 180 carriers that operated one year or less and over 80 that operated two years or less. These carriers have accounted for over 40 percent of the turnover in the industry.

When looked at in more detail, there is a much greater degree of industry stability than is apparent when looking at only the total number of carriers that have operated in any given year. Of the current top 50 commuter air carriers, about 70 percent have been in business for over 10 years. Over 30 percent of the commuters airlines operating in 1984 have been in business for 10 years or more, and over 50 percent for 7 years or longer.

Although the trend in the total number of commuters over the past several years has been downward, this core of stable, growing commuters has evolved from relatively small business operations to very large business organizations, and, as such, have become an integral part of the air transportation industry. The growth in size is evidenced by the fact that the average number of passenger enplanements per carrier has increased from just over 30,000 in 1970 to over 136,000 in 1984. To underline the growth in size and significance of the commuter airlines, there were three commuters that enplaned 1 million or more passengers during 1984. Additionally, some 60 commuters reported over 100,000 passenger enplanements in 1984 compared to only 6 carriers in 1970.

This trend of decreasing numbers and increasing size is expected to continue for several more years. This is due in part to an increasing number of mergers, acquisitions, and to a lesser extent, bankruptcies. The underlying rationale, is that, it is less expensive to expand through mergers and/or acquisitions than to purchase new aircraft for the same purpose. But it also takes a financially stable air carrier to buy and operate the new generation of 30-40 seat commuter aircraft. Size, in addition to financial stability, is an important factor when negotiating with financial institutions to arrange financing for the purchase of a new aircraft. Many people within the commuter industry see this trend of decreasing numbers of commuters and increasing size ultimately leading to an industry dominated by 50 to 60 very large commuter airlines.

FORECAST ASSUMPTIONS

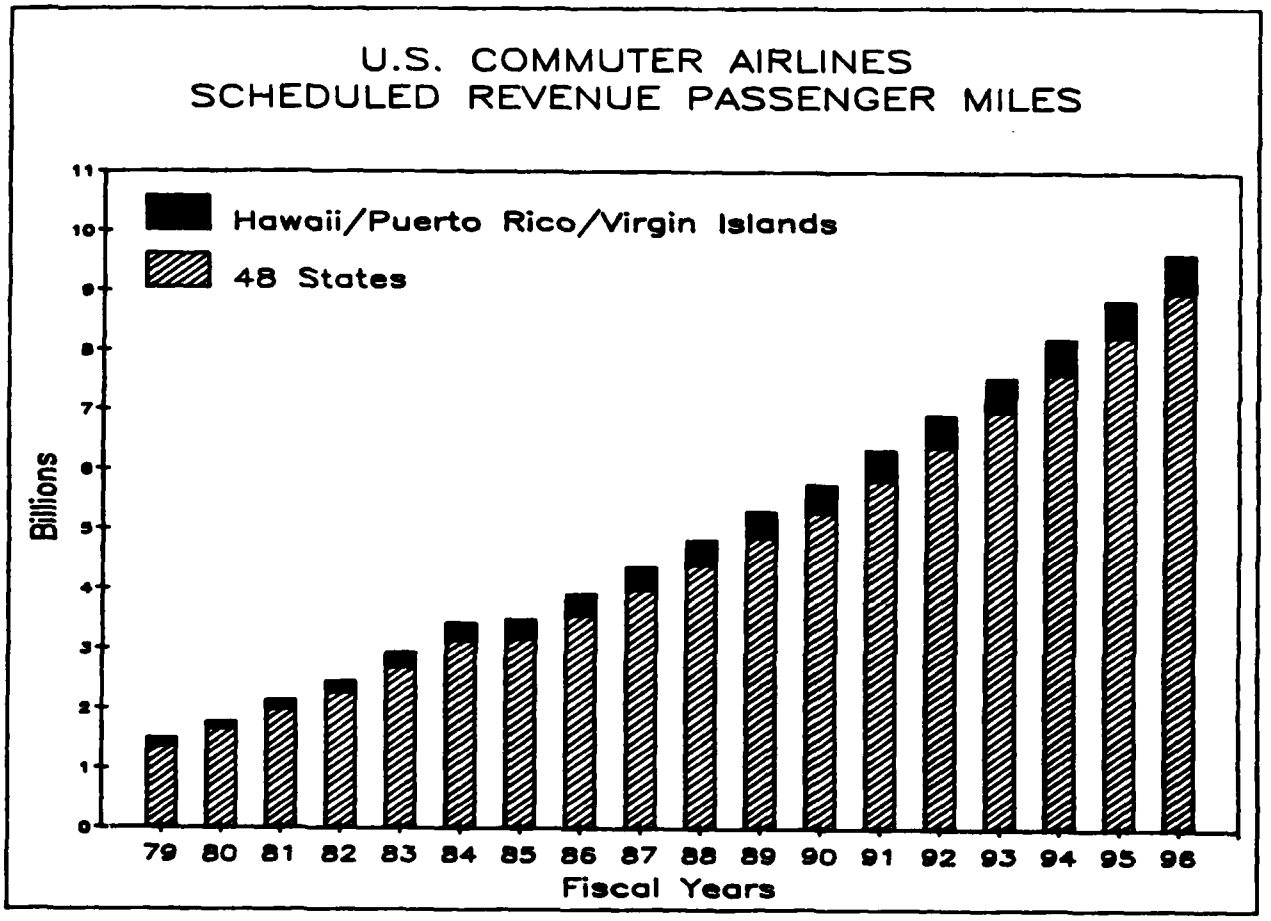
It is expected that commuter carriers will continue to benefit from the large air carrier's route rationalization policies over the next several years. It is also expected that the average number of seats per aircraft, the number of aircraft, the number of city-pairs served, and the average stage length will increase over the forecast period. However, it is assumed that the commuters will continue to serve primarily those markets under 200 miles where they are now concentrated. Growth achieved through replacement of air carrier service will cease to be a major factor by the late 80's. After that time, growth for the industry is expected to come from increasing demand placed on a stable, mature commuter airline industry.

FORECASTS

After a brief slowdown in the demand for commuter service in 1982, the strong growth in commuter activity, relative to other segments of the aviation industry, resumed in 1983 and continued through 1984. The current forecasts anticipate higher growth rates in the early years of the forecast period and then a gradual decline in the magnitude of that growth as 1996 is approached. As noted earlier, Air Wisconsin and Empire Airlines are excluded from the forecasts.

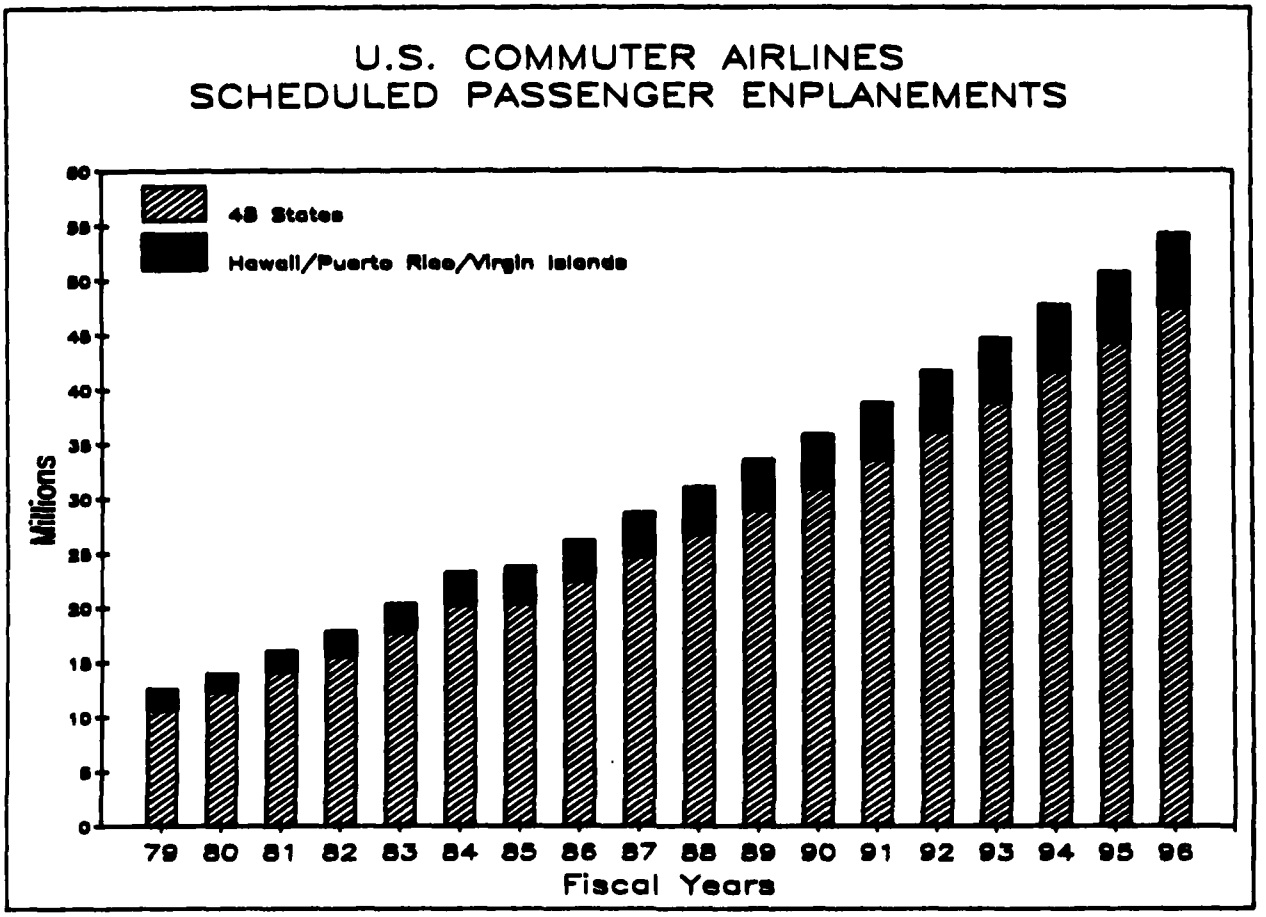
Revenue Passenger Miles

In 1985, the commuter's revenue passenger miles are forecast to increase by only 1.8 percent, 14.2 percent if Air Wisconsin and Empire are excluded from the 1984 historical data. Revenue passenger miles are forecast to increase by 12.1 percent in 1985 and by 11.5 percent in 1987. The average annual growth rate between 1984 and 1996 is 9.0 percent. Commuter revenue miles will total 9.6 billion in 1996, almost triple the 1984 level.



Passenger Enplanements

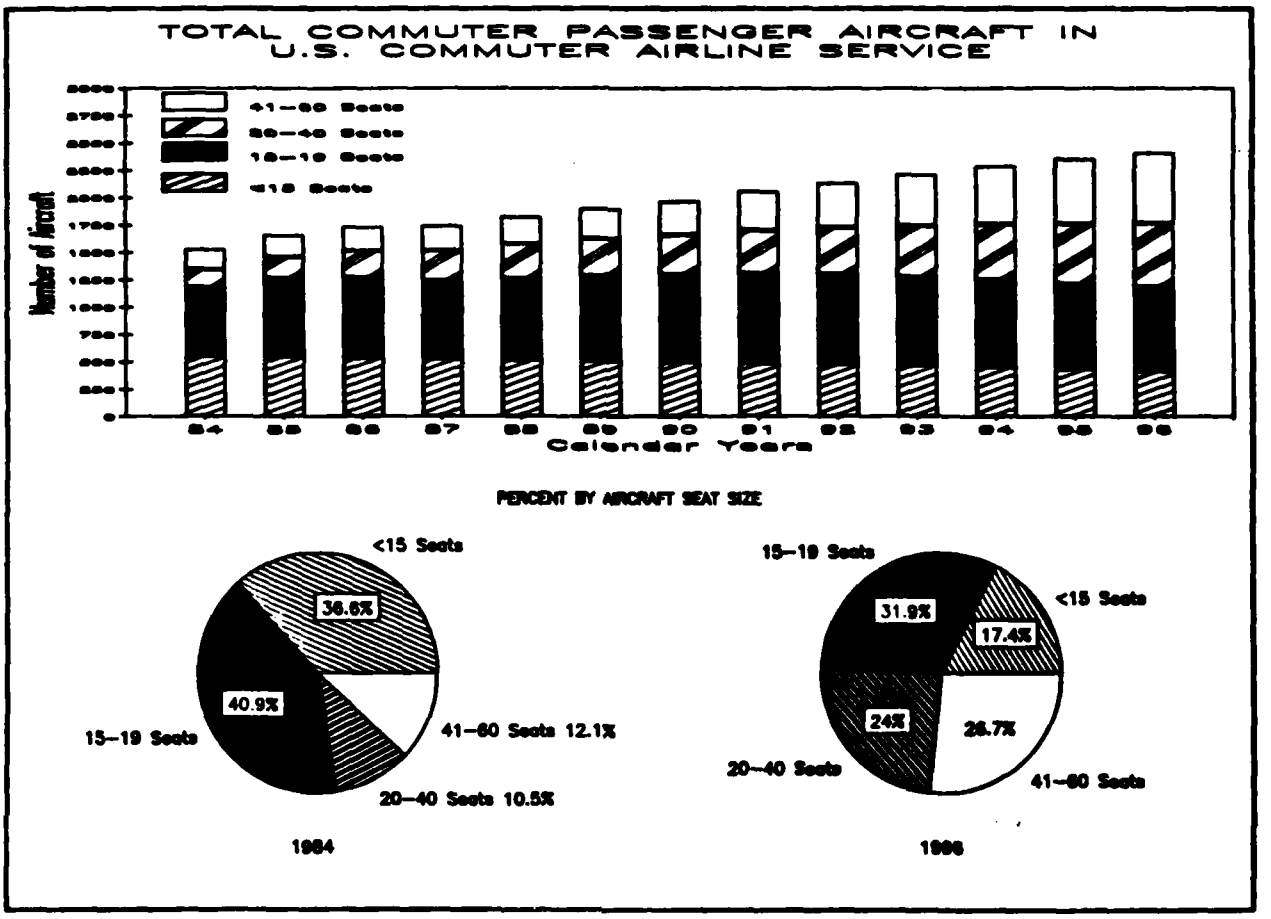
Revenue passenger enplanement are forecast to increase by 2.2 percent in 1985, 11.3 percent if Air Wisconsin and Empire are removed from the 1984 data. Passenger enplanements are expected to increase by 10.1 percent in 1986 and 9.6 percent in 1987. The average annual growth rate for the forecast period is expected to be 7.3 percent. By 1996, commuter passenger enplanements are forecast to reach 54.2 million, more than double the 1984 level.



Commuter Fleet

The growth of the commuter airline industry is also reflected in the growth and changing composition of the commuter aircraft fleet, with the trend being toward greater use of larger aircraft. The total fleet is forecast to grow at an average annual rate of about 3.9 percent through 1996, increasing from 1,531 aircraft in 1984 to 2,413 in 1996. However, more important than the growth in total aircraft is the changing composition of the fleet.

In 1980, aircraft with less than 15 seats accounted for 56 percent of the commuter fleet. In 1984, these aircraft accounted for just under 37 percent of the fleet. This downward trend is expected to continue throughout the forecast period. By 1996, the number of aircraft with less than 15 seats is expected to decline by 25 percent and account for just over 17 percent of the fleet.



The "15-19 seats" category now represents the largest portion of the fleet, increasing from 29 percent in 1980 to almost 41 percent in 1984. This category will continue to account for the largest portion of the fleet throughout the forecast period; however, its relative share of the fleet will decline to just under 32 percent in 1996.

The largest growth in the commuter aircraft fleet will be in the "20-40 seats" and the "greater than 40 seats" categories. In 1980, these categories represented only 7.5 and 7.4 percent of the fleet, respectively. In 1984, the "20-40 seats" category increased to 10.5 percent and the "greater than 40 seats" category to 12.0 percent. By 1996, these two categories are expected to account for over half of the total fleet, 24.0 percent in the "20-40 seats" category and 26.7 percent in the "greater than 40 seats" category. During the forecast period, the "20-40 seats" category is expected to increase from 160 aircraft in 1984 to 579 in 1996, an average annual increase of 11.3 percent. The "greater than 40 seats" category increases from 185 to 644, an average annual growth of 10.9 percent. This trend toward larger aircraft is expected to increase the average seat size per aircraft from 18.6 seats in 1984 to 26.5 seats in 1996.

CHAPTER V

GENERAL AVIATION

Chapter V

General Aviation

The general aviation industry is undergoing substantial structural changes. These changes indicate that the long-term growth of the active fleet and activity will be slowing. Aircraft shipments have been continuously falling since 1979. Concurrently, prices and operating costs have been increasing faster than the rate of inflation. During this period, we have also witnessed the significant growth of ultralight sales. These vehicles provide a relatively low cost alternative for recreational flying in conventional aircraft. Additional evidence which shows that general aviation growth may be moderating is the continuing decline in the numbers of student and private pilots. Ultimately, the shrinking stock of pilots and the slowing in the expansion of the active fleet will reduce the rate of growth of activity at FAA facilities.

REVIEW OF 1984

Fleet Composition and Aircraft Shipments

As of January 1, 1984, the general aviation fleet consisted of 213,292 aircraft. The annual growth rate of the total fleet for the period 1980 to 1984 was only 0.4 percent. During this period, the population of single engine piston aircraft fell from 168,400 to 166,400, while the multi-engine piston fleet remained stable. Turbine powered fixed wing aircraft grew at an annual rate of 10.9 percent, and the rotorcraft fleet increased about 2.9 percent a year.

Shipments of general aviation aircraft (excluding helicopters, balloons, dirigibles, and gliders) declined approximately 14 percent in 1984. Single engine and multi-engine piston aircraft deliveries fell 12 percent and 22 percent, respectively. Shipments of turboprop aircraft fell 19 percent, while turbojet aircraft deliveries increased 13 percent. Latest industry estimates show 1985 shipments remaining at 1984 levels.

Hours Flown

Total general aviation hours flown in fiscal 1983 was 36.6 million hours, down 3.2 percent from fiscal 1982. Single engine piston aircraft accounted for 65.0 percent of all hours flown, multi-engine piston aircraft for 15.9 percent, turbine powered aircraft for 10.7 percent, and rotorcraft for 7.4 percent. The single engine piston aircraft hours flown declined 5.6 percent in 1983, while turbine powered aircraft hours increased 5.4 percent, and rotorcraft hours increased 8.0 percent. During the period 1980 through 1983, total hours flown declined at an annual rate of 4.2 percent; single engine piston aircraft hours flown declined at a rate of 6.3 percent; turbine powered aircraft hours grew at a 4.7 percent rate; and rotorcraft hours flown increased at a rate of 4.0 percent.

In calendar 1983, personal and instructional use accounted for 38 percent of all hours flown, and business and executive use for 32 percent. In 1970, personal and instructional use accounted for over 50 percent of all hours flown, and business and executive for only 28 percent. Between 1970 and 1983, the use of general aviation for business grew at a 3 percent rate, while personal and instructional use declined at a rate of approximately 1 percent a year.

Pilot Population

The declining number of active pilots provides further evidence of general aviations changing characteristics. As of January 1, 1984, the total pilot population was 718,004, down 2.1 percent from 1983. For the period 1980 through 1984, total active pilots declined at a yearly rate of 3.1 percent. During this period student pilots fell at a yearly rate of 8.5 percent, and private pilots declined at a 1.9 percent annual rate.

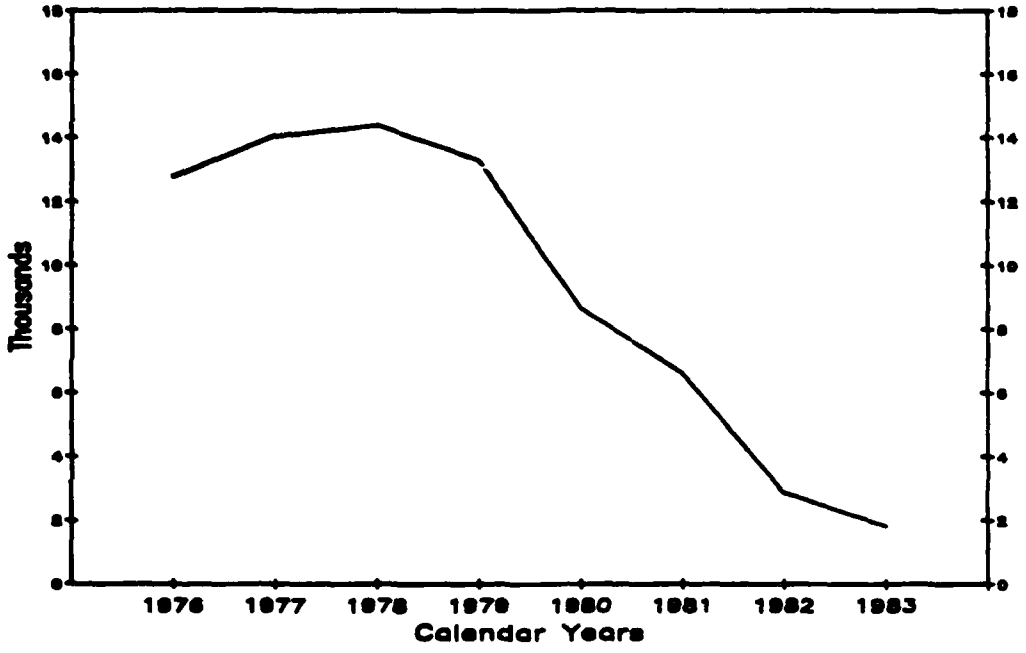
DISCUSSION OF STRUCTURAL CHANGES

An indication that fundamental changes have taken place in the industry is the failure of aircraft shipments to respond to an expanding economy. During previous economic cycles, changes in the general aviation industry have generally paralleled changes in business activity. Empirical analyses have shown that on the average a 1 percent increase in gross national product (GNP), adjusted for price changes, will increase general aviation unit shipments by about 4.2 percent. However, since the long precipitous decline of aircraft shipments began in 1979, this expected result has not occurred. For example, in 1979 real GNP increased 2.8 percent, and shipments declined 4.3 percent. Again in 1981, real GNP increased 2.6 percent while shipments declined 21 percent. In 1983, which was an especially good year for the economy, real GNP increased 3.4 percent and unit shipments fell 37 percent. Although 1984 has shown strong economic growth, shipments continue to fall 14 percent below 1983 levels. This relatively long run of contrary movements of production and real GNP implies that other variables are outweighing the positive effects of income growth. We would not expect this persistent pattern to be due to chance alone. Factors such as the availability of low cost alternatives for recreational flying, changes in tastes and preferences, rapidly rising prices and operating costs of conventional aircraft, and continued high real interest rates may all be contributing to the downturn. A close look at single engine piston aircraft, which historically has comprised 30 percent of total aircraft shipments, provides some insights into the changes that are occurring.

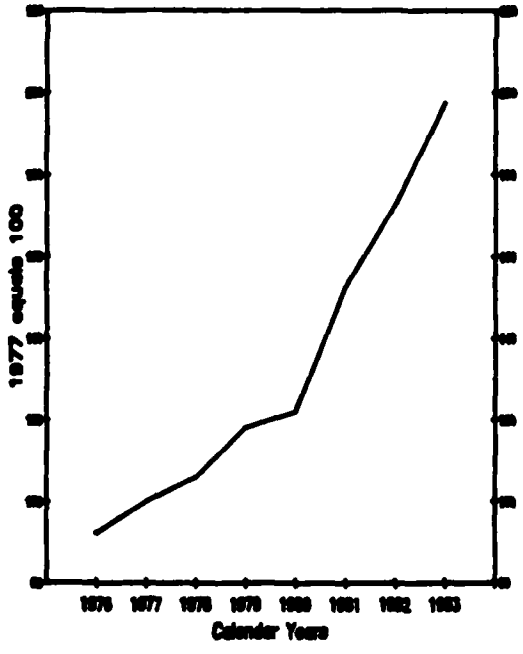
In 1978, the production of single engine piston aircraft was 14,398 units; in 1983 it fell to 1,811 units, an average annual decline of approximately 33 percent between 1978 and 1983. For the period 1976 through 1983, single engine piston aircraft prices increased at an average yearly rate of 11 percent. Prices, adjusted for inflation, grew at approximately 4 percent a year, which is also substantial. Operating

SINGLE ENGINE PISTON AIRCRAFT TRENDS

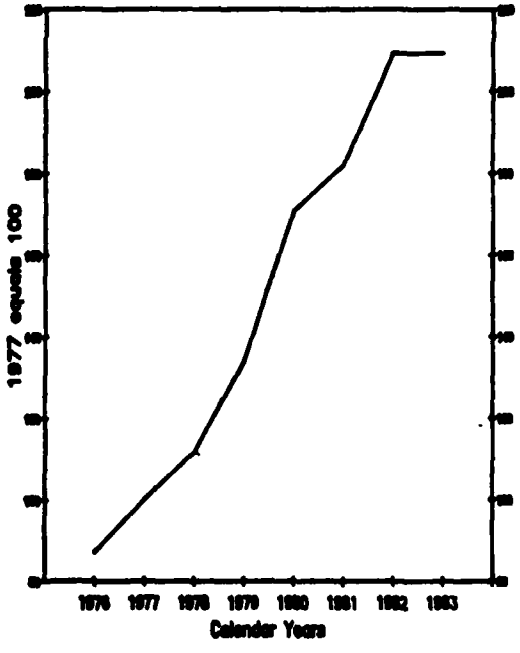
AIRCRAFT SHIPMENTS



AIRCRAFT PRICES



AIRCRAFT OPERATING COST/HOUR



costs have also been rising faster than the rate of inflation. For the period 1977 through 1983, the average yearly growth rate was 13 percent. The rate adjusted for inflation increased almost 6 percent a year. It is important to note that aircraft prices accelerated from 1980 to 1983, increasing at an annual rate of almost 14 percent. Throughout this period, shipments fell rapidly while the production and sales of ultralights expanded.

The growth of the ultralight industry since its inception in the latter part of the 1970's has been exceptional. There are 60 manufacturers and approximately 25,000 ultralights now in use in this country. Manufacturers deliveries have averaged approximately 7000 units per year during the past three years, and indications are that this rate of production will be sustained or grow during the next several years. The costs of owning and operating these aircraft are relatively low. The average price of an ultralight is between $4,500 and $6,500 and its hourly operating cost is about $4. Clearly, this compares very favorably with an average price of $60,000 for single engine piston aircraft that has an operating cost between $30 and $60 an hour. A recent comprehensive survey conducted by the Aircraft Owners and Pilots Association of all members of their Ultralight Division suggests that ultralights and single engine piston aircraft are competing in similar socioeconomic markets. For the ultralight pilots sampled, the average income is greater than $55,000 a year, and the average age is 44. Moreover, a large percentage of the pilots are managers, professionals, and skilled tradesmen. The survey also shows that the relatively high costs of owning and operating conventional aircraft may be responsible for shifting current and potential certificated pilots to ultralights. For example, 21.2 percent of former FAA certificated pilots stopped flying conventional aircraft and started flying ultralights because ultralights are less expensive and more fun to fly. Approximately 19 percent of the FAA pilots who have never flown ultralights indicated that they wanted to learn to fly these vehicles within the next year because conventional aircraft are becoming too expensive. Twenty-one percent of the ultralight pilots who have never been certificated pilots started flying ultralights because they appeared to be the most inexpensive way to fly. Further, about 32 percent of the general aviation private pilots diminished the amount of flying they did in conventional aircraft because of their ultralight flying. These results strongly suggest that the two types of aircraft are considered substitutes.

The Office of Aviation Policy and Plans recently completed an analyses to determine if the increasing prices and operating costs of single engine piston aircraft are shifting a segment of the general aviation market, specifically recreational flying, to ultralights. As part of the effort, the effect of rising prices and operating costs on single engine piston aircraft shipments, and the impact of the growth in the ultralight fleet on general aviation operations and hours flown were also measured.

In general, the analyses show that rapidly rising prices and operating costs of single engine piston aircraft will increase ultralight sales. Clearly, a segment of the general aviation market perceives that the satisfaction derived from flying ultralight aircraft is equivalent to operating single engine piston aircraft. Consequently, pilots will simply shift to the least cost alternative. The results also confirm previous analyses that single engine piston aircraft shipments are highly dependent on aircraft prices and operating costs, adjusted for price changes. Specifically, small increases in operating costs and aircraft prices will significantly reduce shipments. If ultralight aircraft are being purchased instead of single engine piston aircraft, eventually a slowing in the growth rates of the active general aviation fleet, hours flown, and operations will occur. The statistical analysis leads to the following conclusions:

- 1 percent increase in the real price of single engine piston aircraft increased the sales of ultralight aircraft by 4.2 percent.
- 1 percent increase in the real operating cost per hour of single engine piston aircraft increased the sales of ultralight aircraft by 3.3 percent.
- 1 percent increase in the real price of single engine piston aircraft reduced shipments by 3.1 percent.
- 1 percent increase in the real operating cost per hour of single engine piston aircraft reduced shipments by 5.8 percent.
- 1 percent increase in the sales of ultralight aircraft reduced general aviation itinerant and local operations, and the general aviation active fleet by approximately 0.1 percent.
- 1 percent increase in the ultralight fleet reduced total general aviation hours flown by about 0.2 percent.

In short, the empirical results imply that the rapidly rising prices and operating costs of light production aircraft and the availability of a low cost alternative are adversely effecting the market for single engine piston aircraft. If real prices and operating costs of single engine piston aircraft continue to increase as they have during the past three years, this will more than offset the positive effect of a growing economy.

The persistence of high real interest rates may also be partly responsible for retarding the recovery of the industry. Numerous statistical tests over different time series have repeatedly shown that the quantity of general aviation aircraft demanded is inversely related to interest rates. In developing the general aviation forecast model, statistical estimation methods indicated that relatively small changes in the long-term interest rate will have a large negative impact on the change in the general aviation active fleet. Specifically, a 1 percent increase in the long-term interest rate, all other things remaining the same, will reduce the change in the active general aviation fleet by about 2 percent.

Most of the theoretical and empirical economic analyses concerning the general aviation industry have been conducted at a highly aggregated level. These macro results, however, do reflect the impact of changing economic conditions on individual and corporate decisions concerning the purchase of durables and capital goods. For example, the purchase of an aircraft by a firm is implicitly the procurement of years of transportation services. In any given year, there will be an expected flow of services to which the firm will attach a monetary value. If operating costs and taxes are subtracted from this gross value, a stream of after-tax net services will be derived. This stream of services along with the purchase price of the aircraft will determine the rate of return on investment. If this rate is less than the rate at which the firm can borrow, the purchase will most likely not be made. In general, increasing interest rates, all other things remaining the same, will reduce capital expenditures. The after-tax rate of return, however, is also effected by the price of the equipment and the structure of tax incentives. Increasing prices will lower the rate of return relative to the borrowing rate, which will discourage investment. Tax incentives such as the investment tax credit and accelerated depreciation will tend to stimulate capital purchases by reducing the amount of taxes that must be paid on income from assets, and by changing the timing of tax payments in favor of the future.

The continuing decline in the numbers of student and private pilots provides further evidence that structural changes are occurring in general aviation. These trends will also contribute to the slowing of activity at FAA facilities. For the period 1979 through 1983, student pilots fell from 210,180 to 147,197, a decline of 9 percent a year. During the 1960's and 1970's the number of student pilots generally followed changes in economic activity. This pattern, however, has not occurred in the 1980's. Periods of robust economic growth have not been accompanied by a resurgence of pilot training. Rapidly rising training costs, aircraft prices, and operating costs are probably responsible for this phenomenon. A declining population of students and an accelerating attrition rate of private pilots have reduced the total number of private pilots over the last 3 years. From 1980 to 1983 total active private pilots fell from 357,479 to 318,643, a yearly rate of decline of about 4 percent. Although the downward trends in the pilot populations are expected to turn around in the next few years, slow growth is anticipated for the forecast period.

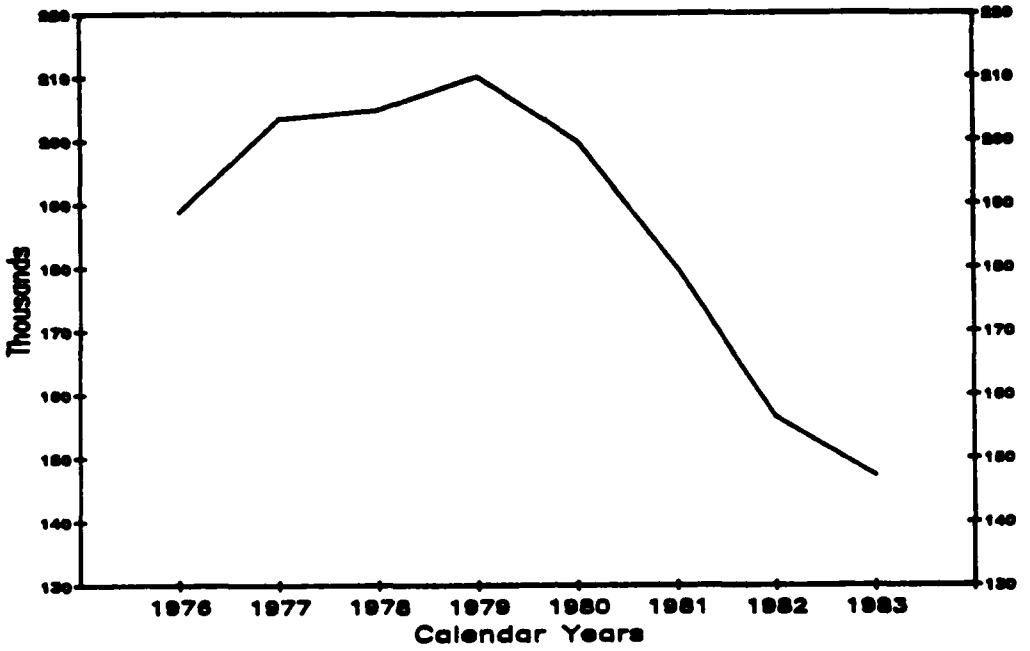
FORECASTS

Hours Flown

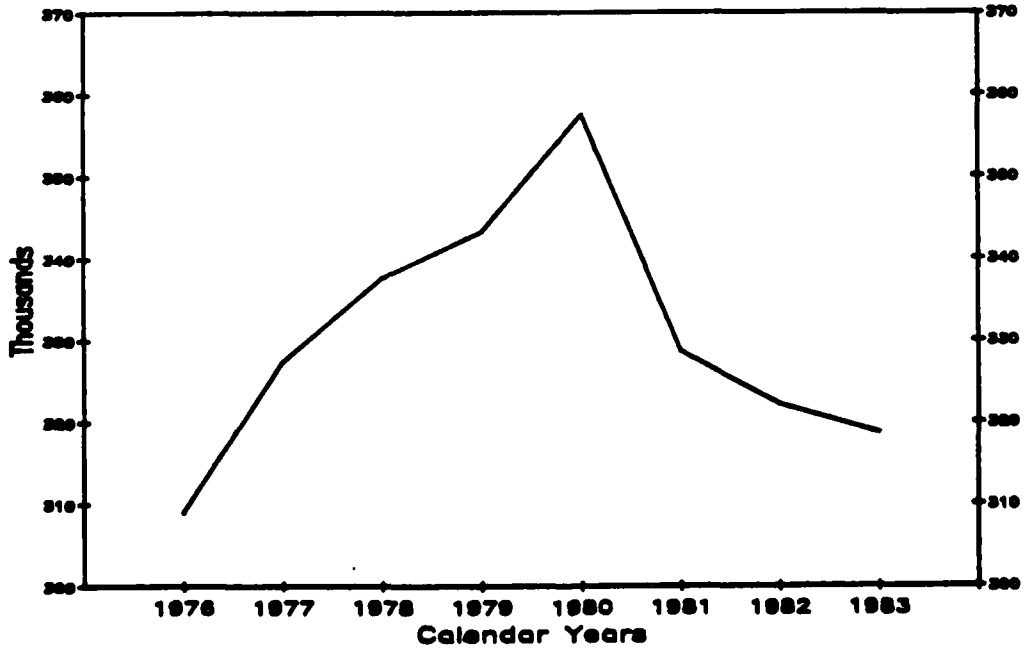
Growth over the entire forecast period for general aviation hours is expected to average 3 percent per year, resulting in an estimated 51.5 million hours flown in 1996. During the 1960's and 1970's, the average annual growth rate was about 6 percent. Single engine piston aircraft hours flown is forecast to grow 2.8 percent a year. Turbine powered aircraft hours flown is projected to increase from 4.0 million in 1984 to 6.6 million in 1996, growing at the rate of 4.3 percent a year. Turbine rotorcraft hours flown is expected to increase at the yearly rate of 5.2 percent.

ACTIVE PILOT TRENDS

ACTIVE STUDENT PILOTS



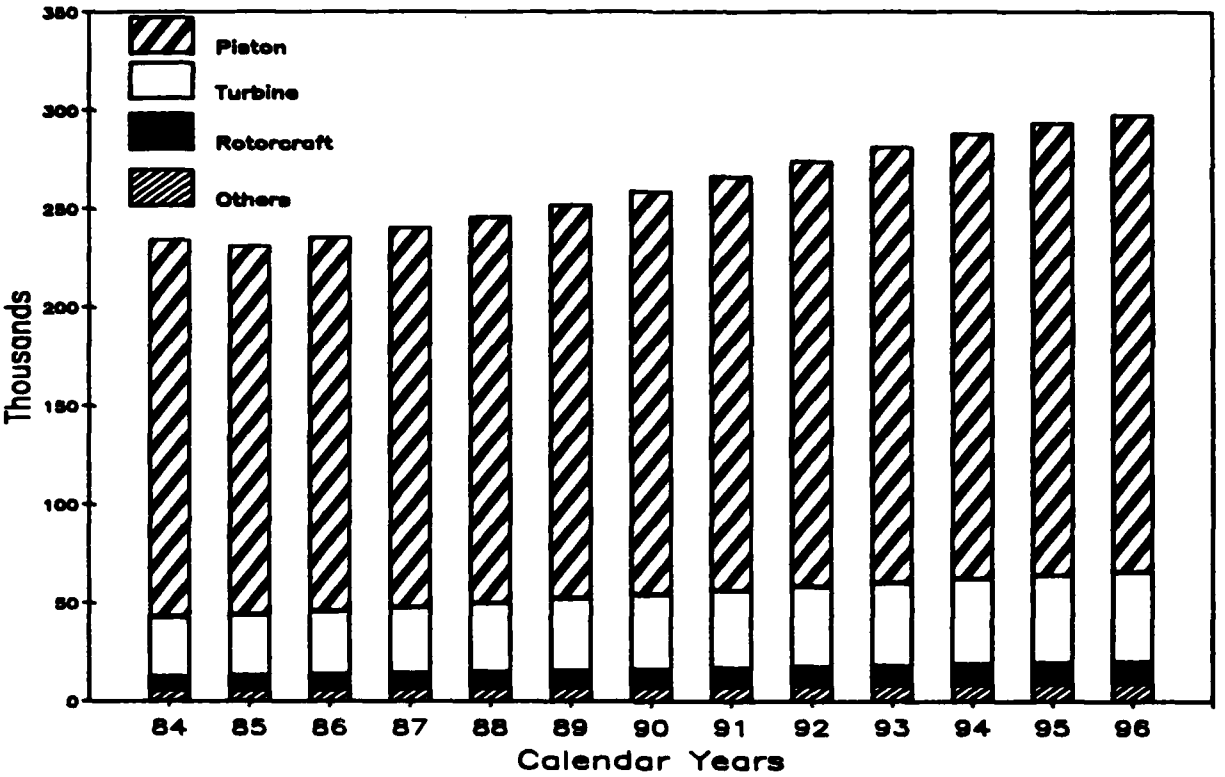
ACTIVE PRIVATE PILOTS



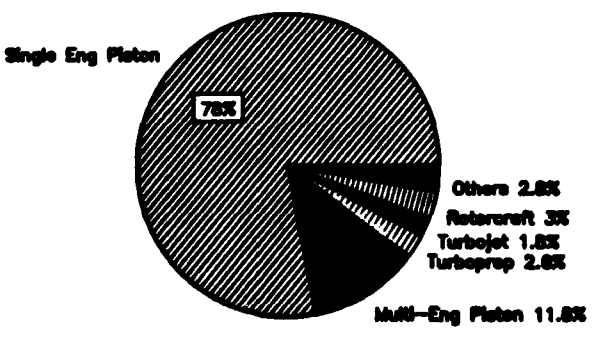
Fleet

The industry will experience a continuation of slow growth in the general aviation fleet. The population of active aircraft is forecast to increase 2 percent a year between 1984 and 1996. Active single engine piston aircraft is forecast to grow at an annual rate of only 1.4 percent. The number of turbine powered aircraft is projected to increase from 9,351 in 1984 to 18,500 in 1996, growing at the rate of approximately 5.8 percent a year. The turbine rotorcraft fleet is expected to increase at a yearly rate of 4.2 percent.

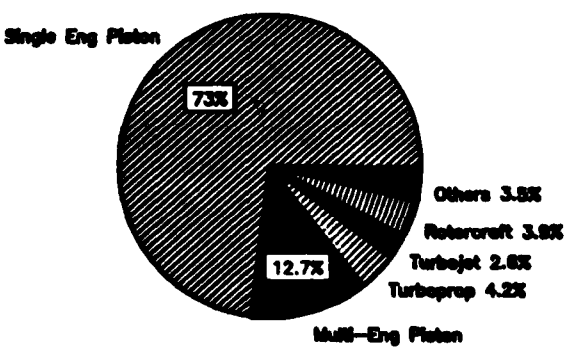
ESTIMATED ACTIVE GENERAL AVIATION AIRCRAFT



PERCENT BY AIRCRAFT TYPE



1984



1996

CHAPTER VI

HELICOPTERS

Chapter VI

Helicopters

REVIEW OF 1984

Recent Shipments

Preliminary data for calendar year 1984 indicate that shipments of U.S. civil helicopters will total 418, a 4 percent increase from the level of 401 helicopters shipped in 1983. The value of the 1984 shipments equals $336 million compared with $269 million in 1983, a 25 percent increase. Exports of civil helicopters reached $198 million; imports totaled $54 million. Thus, the industry shipments made a net contribution of $144 million to the balance of trade, about the same contribution made in 1983 ($142 million). Shipments had declined considerably during the previous national economic downturn. In the economic recovery phase, helicopter shipments generally lag behind the general economy. Thus, the recent increase in 1984 suggests that the slowdown in the helicopter industry may have bottomed out and a period of growth is anticipated.

Current Fleet and Hours Flown

As of January 1, 1984, there were approximately 6,500 active civil rotorcraft in the U.S., up 6.6 percent from 6,100 in January 1983. The recent fleet estimate was still 7.1 percent below the 1982 level of 7,000 rotorcraft. In 1984, the number of turbine helicopters equalled 4,000, about 62 percent of the active fleet. This portion of the fleet has grown about 48 percent since 1980. By comparison, the number of piston powered rotorcraft declined 19.4 percent since 1980.

Rotorcraft flew an estimated 2.5 million hours in 1984. Turbine powered rotorcraft flew 1.9 million hours, 76 percent of the total number of hours flown.

Since 1980, hours flown in turbine powered rotorcraft have grown relative to those of piston powered rotorcraft. In 1980, turbine powered rotorcraft hours flown accounted for 66.7 percent of all rotorcraft hours flown.

FORECASTS

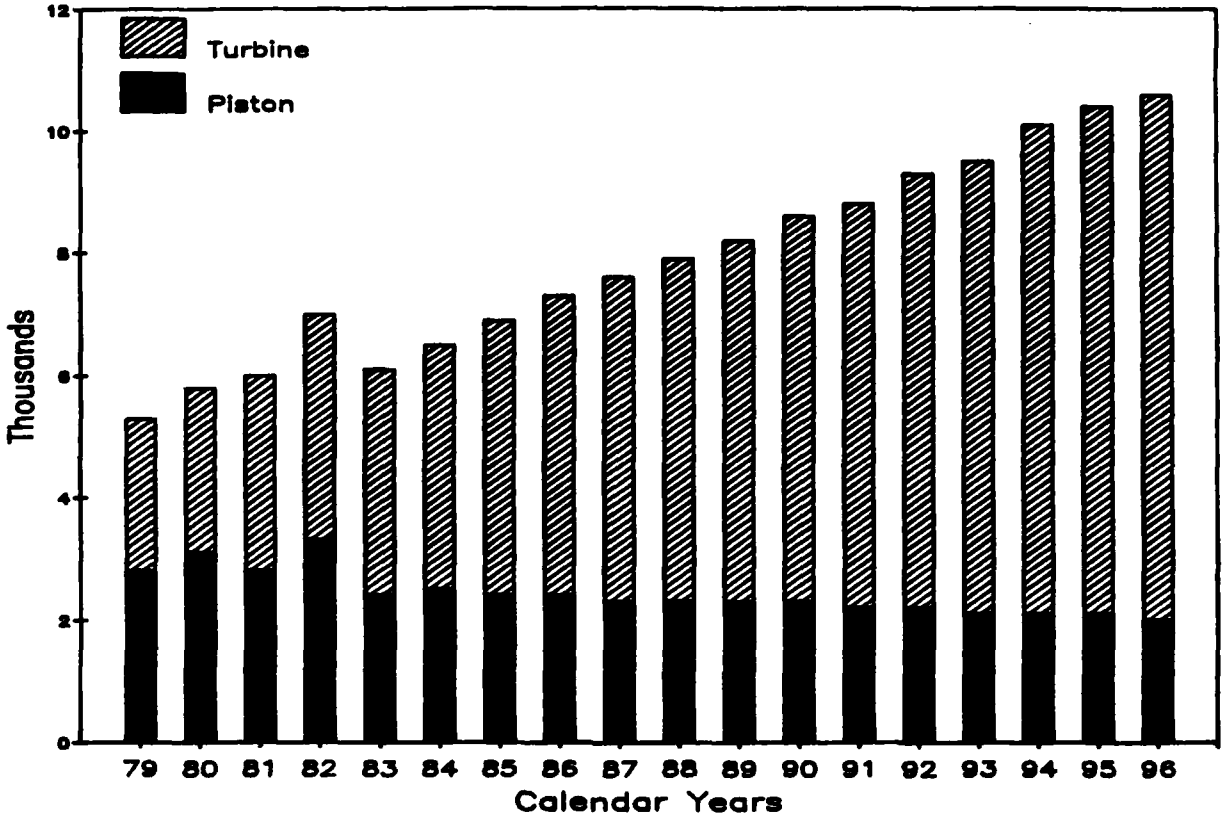
The forecasts of rotorcraft fleet and hours flown presented in this section were derived from the output of econometric models developed for the FAA and presented in a report concluded in November 1983. The results were adjusted to account for recent benchmark data for calendar year 1983.

Fleet and Hours Flown

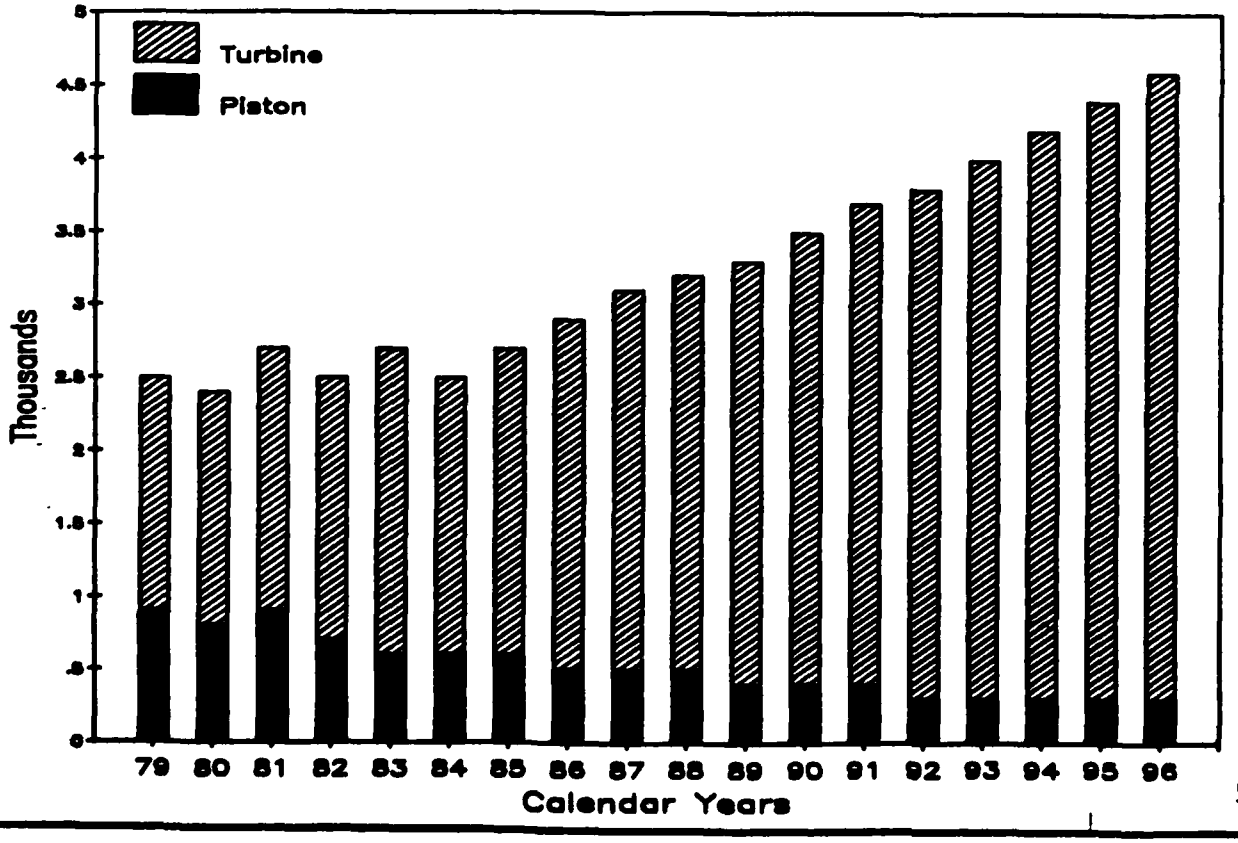
The rotorcraft fleet is expected to reach 10,600 in 1996, an annual average increase of 4.2 percent over the 1984 level. In 1996, the turbine powered fleet will more than double the 1984 number and will reach 8,600 while the piston powered fleet will decrease to 2,000 from its current level of 2,500.

ROTORCRAFT FLEET AND HOURS FLOWN

TOTAL ACTIVE ROTORCRAFT



HOURS FLOWN



The growth in the fleet will be paralleled by growth in hours flown which will reach 4.6 million in 1996, an average annual growth of 5.2 percent. Similarly, hours flown by turbine powered helicopters will more than double reaching a total of 4.3 million hours. In contrast, hours flown by piston powered rotorcraft will decline by 50 percent to 300,000.

Fuel Consumed

In 1984, fuel consumed by rotorcraft totaled 70.4 million gallons. By 1995, fuel consumed will increase to 151.5 million gallons, an average annual increase of 6.6 percent. Over 97 percent of the fuel consumed in 1995 will be used by turbine powered rotorcraft compared with 88 percent in 1984.

CHAPTER VII

FAA WORKLOAD MEASURES

Chapter VII

FAA Workload Measures

The FAA provides the aviation community with three operational services: air traffic control at selected airports, traffic surveillance and aircraft separation by Air Route Traffic Control Centers, and flight planning and pilot briefings at the Flight Service Stations. All four categories of aviation - general aviation, air carrier, commuter/air taxi, and military - employ these services to enhance aviation traffic safety.

Multiple indicators are used to describe the total FAA operational workload. The four categories of system users differ in the demands they impose on the air traffic system. Consequently, no single measure typifies past trends and future demand for these FAA services. There have been, and will continue to be, different socioeconomic forces driving the growth of each of the system users.

REVIEW OF 1984

Tower Activity

Following three straight years of declining activity, aircraft operations at FAA towered airports increased 6.6 percent to 56.9 million operations in fiscal 1984, the second consecutive year of strong growth. The 1984 increase was due in large part to the strong growth in the U.S. economy which stimulated demand for commercial aviation services. Commercial activity, the sum of air carrier and commuter/air taxi operations, increased by 12.2 percent while noncommercial operations increased by only 4.1 percent. Commuter operations, the fastest growing user category over the past several years, increased 11.9 percent over 1983 levels. Air carrier activity, registering its second straight year of strong growth, grew at 12.4 percent and surpassed the level of operations achieved prior to the 1981 air controllers' strike. General aviation operations increased 4.8 percent in 1984, with itinerant and local operations growing by 4.7 and 5.0 percent, respectively. Military use of FAA facilities decined by 4.0 percent in 1984.

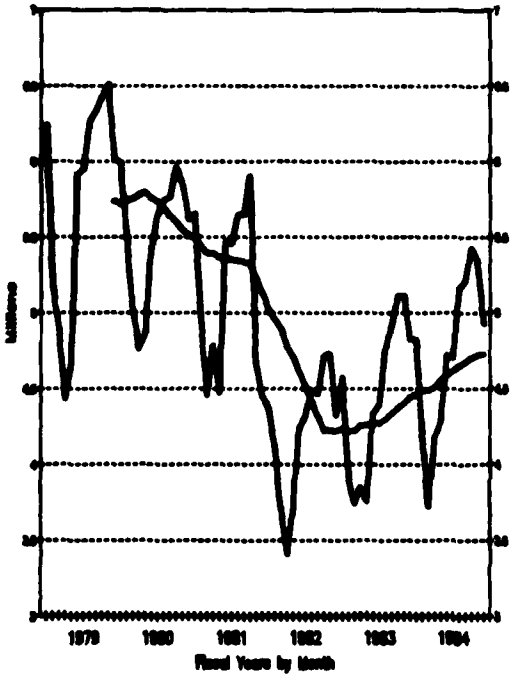
Instrument operations handled at FAA towers also increased for a second consecutive year, up 9.7 percent to 37.3 million operations in 1984. Commuters led the user groups with a 13.2 percent increase in instrument operations, followed by air carrier and general aviation operations, which grew by 11.9 and 8.1 percent, respectively. Military instrument operations increased by 5.3 percent.

Center Activity

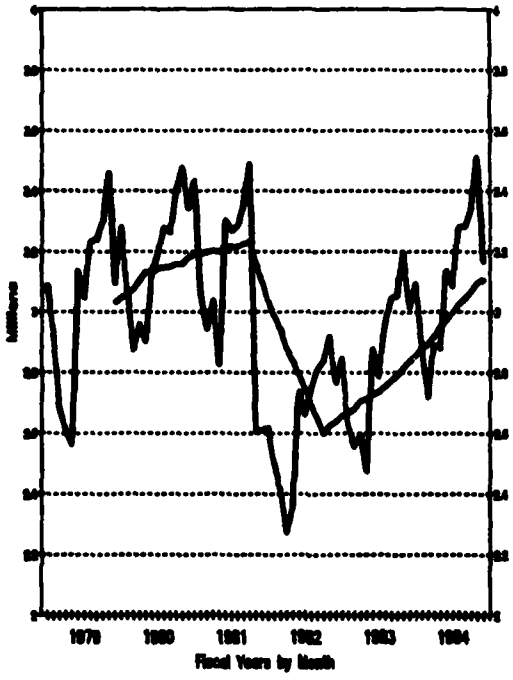
In 1984, the number of aircraft flying under instrument rules handled by Air Traffic Control Center's personnel surpassed the annual level of activity achieved prior to the air controllers' strike, increasing by 7.8 percent to 31.7 million operations. As was the case with activity at FAA towered airports, much of the increase at the Centers can be attributed to the growth in commercial aviation activity. Commercial aircraft handled at the Centers

FAA WORKLOAD TRENDS

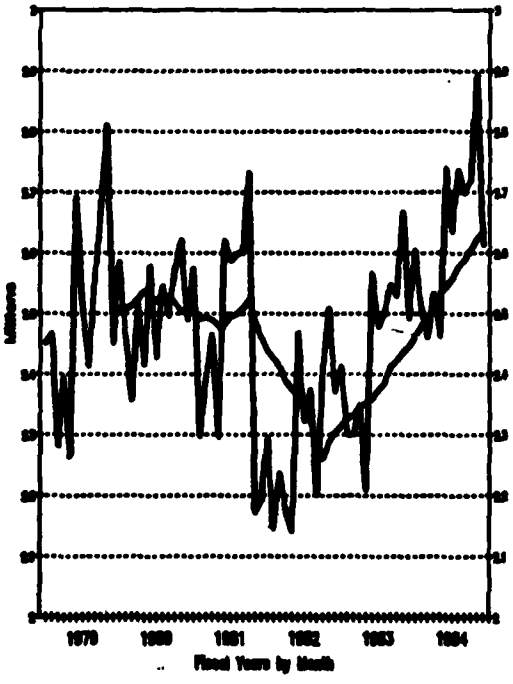
TOWERED AIRPORT OPERATIONS



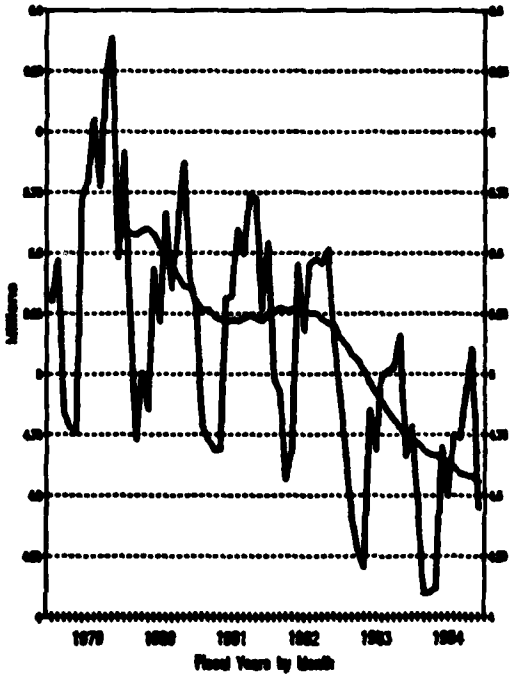
INSTRUMENT OPERATIONS



AIRCRAFT HANDLED



TOTAL FLIGHT SERVICES



increased by 8.0 percent compared to a 6.5 percent increase in noncommercial aircraft handled. Of course, the increasing sophistication of commuter and general aviation pilots and aircraft also contributed to the increase in Center activity. The number of commuter aircraft handled in 1984 increased by 18.9 percent, the number of air carrier aircraft by 6.0 percent, and the number of general aviation aircraft by 6.4 percent. Military aircraft handled increased by 6.5 percent.

Flight Service Station Activity

User demands on Flight Service Stations--pilot briefings, flight plans and aircraft contacted--declined for a fifth consecutive year in 1984, down 3.7 percent from 1983 levels and 17.5 percent from the peak of 66.4 million services rendered in 1979. The number of pilot briefings and aircraft contacted declined by 5.6 and 4.7 percent respectively in 1984, while the number of flight plans originated increased by 1.2 percent. The total number of flight services rendered at Flight Service Stations in 1984 was 54.8 million.

FORECAST ASSUMPTIONS

Number of Towers

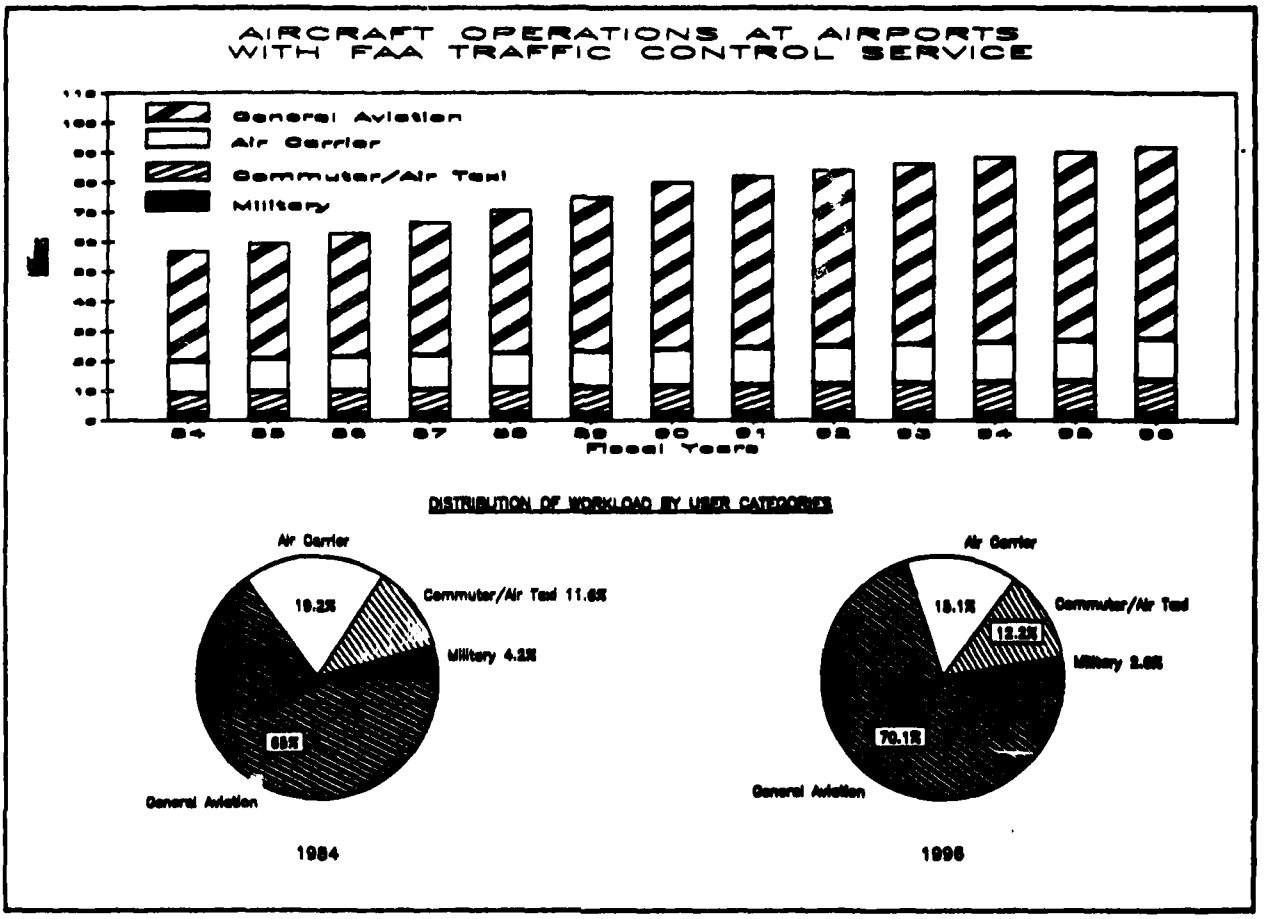
Growth in FAA workload measures is a function of demand imposed on the National Airspace System plus inclusion of aviation activity at locations previously not provided FAA services. Thus, the number of aircraft operations at FAA towered airports in 1996 will consist of traffic at current towers plus those airports with newly commissioned towers during the forecast period. The current forecast reflects the reopening of 30 towers in 1985, all of which had been temporarily closed as a result of the air controllers' strike in 1981.

No specific assumptions beyond the changing traffic mix discussed as part of the aviation activity forecasts have been made in developing the Air Route Traffic Control Center forecast.

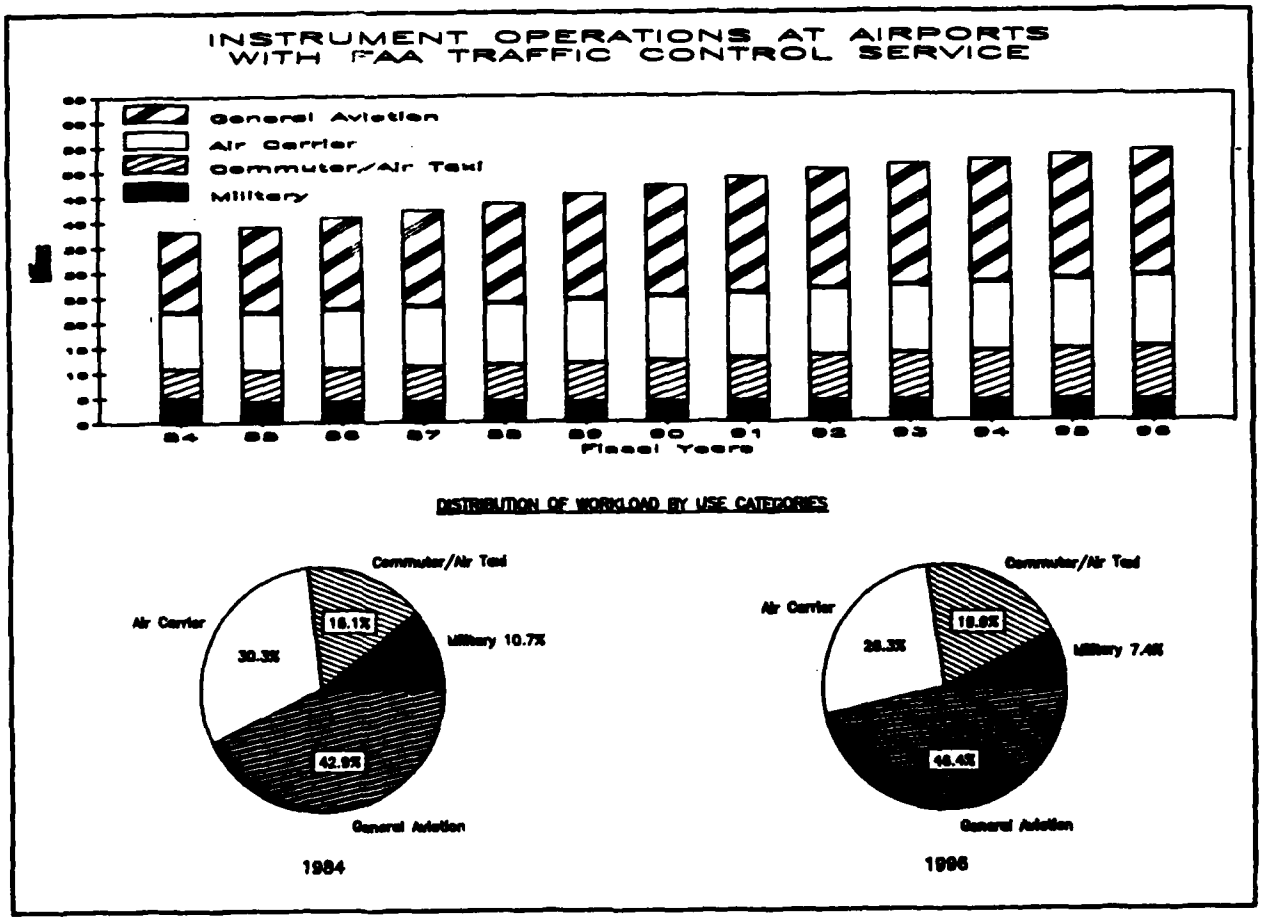
FORECASTS

FAA Towers

In fiscal 1984, activity at FAA towered airports, despite two years of strong growth, totaled only 89 percent of the level of operations achieved in the 12 month period immediately preceding the air traffic controllers' strike. Activity at FAA towers is not expected to reach pre-strike levels until 1987. Based on current forecasts, towered operations are forecast to increase 4.6 percent in 1985, 5.7 percent in both 1986 and 1987, and average 4.1 percent for the period 1984 to 1996. In absolute numbers, towered operations are forecast to increase from 56.9 million in 1984 to 91.9 million in 1996. The mix of traffic is likely to become increasingly more heterogeneous since general aviation and commuter operations are forecast to grow at a faster rate than air carrier operations. The combined operations of general aviation and commuters are expected to account for over 82.3 percent of total tower operations in 1996, up from 76.6 percent in 1984. The forecasted annual growth rates of the user groups over the 12 year forecast period is: general aviation, 4.7 percent; air carrier, 2.0 percent; and commuter/air taxi, 4.5 percent. Military operations are expected to remain constant at the 1984 level of operations.

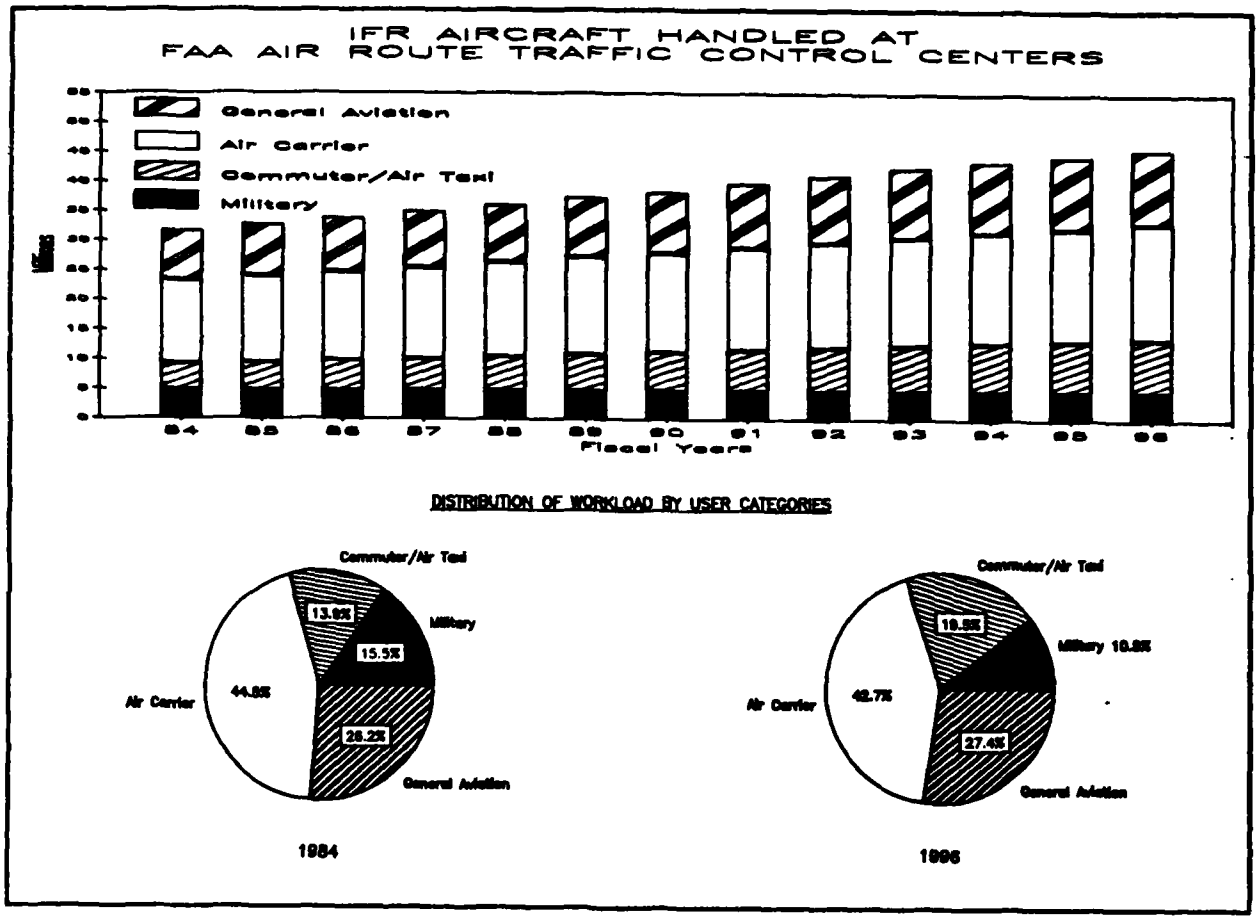


In fiscal 1984, instrument operations at FAA towers equalled 96 percent of the pre-strike level of operations and should surpass the pre-strike level in 1985. Instrument operations are forecast to increase 4.8 percent in 1985, 4.6 percent in 1986, and average 3.1 percent over the 12 year forecast period, growing from 37.3 million in 1984 to 53.9 million in 1996. The mix of instrument operations is also expected to become more heterogeneous as general aviation and commuter/air taxi operations increase at annual rates of 3.8 and 4.9 percent, respectively, over the forecast period. This growth is considerably faster than the 1.9 percent annual growth rate forecast for air carrier operations. By 1996, 66.2 percent of all instrument operations are expected to be performed by the smaller general aviation and commuter/air taxi aircraft, up from 59.0 percent in 1984. Military operations are expected to remain constant at the 1984 level of operations.



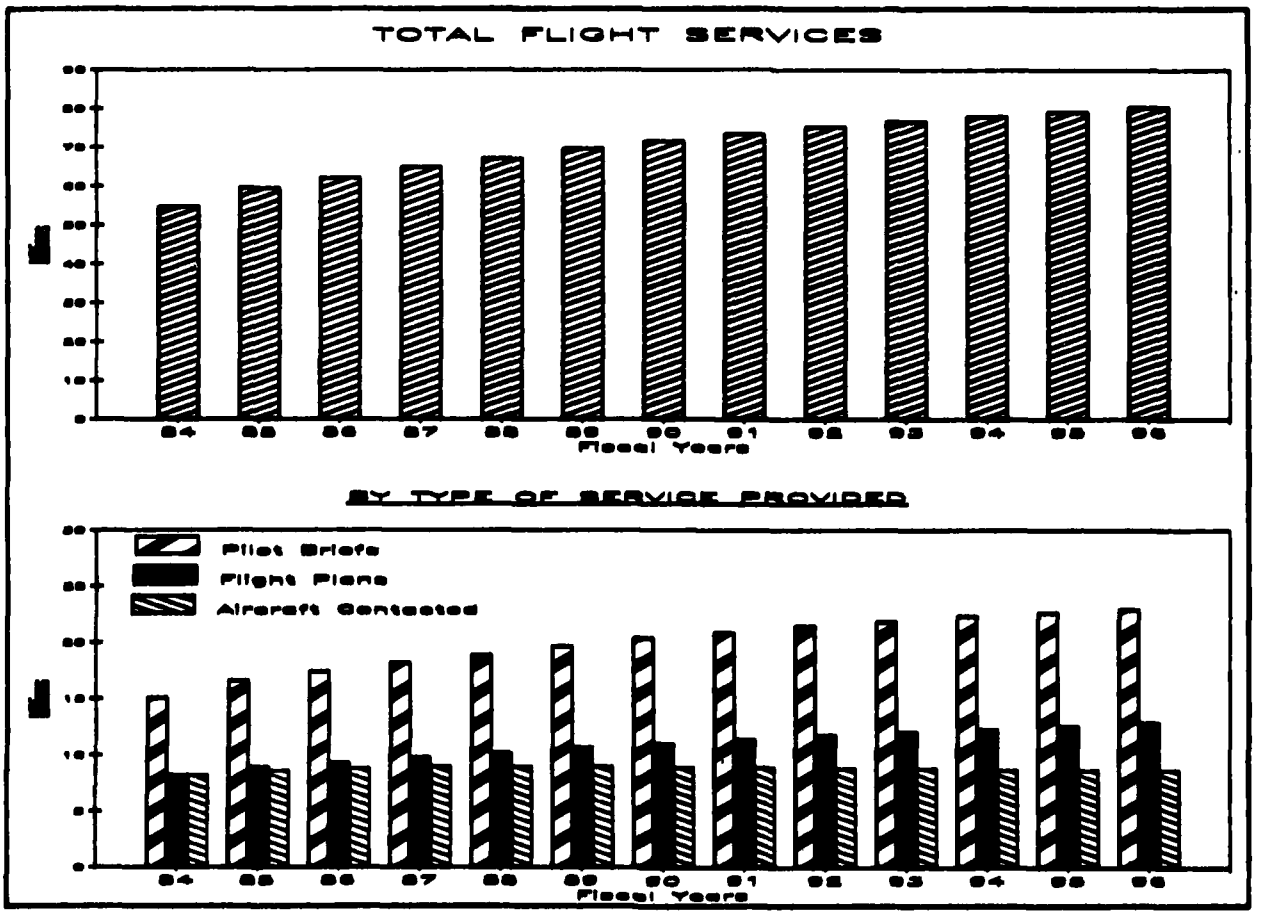
Center Activity

In fiscal 1984, the workload at FAA Air Route Traffic Control Centers exceeded the level of activity achieved in the 12 month period immediately preceding the air controllers' strike by almost 5.0 percent. Workload at the Centers is expected to grow by 3.8 percent in 1985, 3.4 percent in 1986, and average 3.1 percent between 1984 and 1996. In absolute numbers, the Center workload is forecast to increase from 31.7 million aircraft handled in 1984 to 45.7 million in 1996. In 1984, 44.5 percent of the traffic handled at the Centers were air carrier flights. By 1996, only 42.7 percent of the Center's workload is expected to be generated by air carriers. The combined total of general aviation and commuter/air taxi aircraft handled is expected to increase to 46.8 percent of Center workload by 1996. The projected annual growth rates by user groups is: air carrier, 2.5 percent; commuter/air taxi, 6.0 percent; and general aviation, 3.5 percent. The number of military aircraft handled are expected to decline slightly over the forecast period.



Flight Service Station Activity

In fiscal 1984, the total services rendered at FAA Flight Service Stations equalled only 87 percent of the level of operations achieved in the 12 month period immediately preceding the air traffic controllers' strike and is not forecast to return to pre-strike levels until 1987. Total flight services originated at Flight Service Stations were projected to increase 8.8 percent in 1985, 4.4 percent in 1986, and average 3.3 percent over the 12 year forecast period. In actual number, flight services rendered are forecast to increase from 54.8 million in 1984 to 80.5 million in 1996. Pilot briefings are forecast to increase from 15.1 million in 1984 to 23.0 million in 1996, an average annual growth rate of 3.6 percent. The number of flight plans originated are forecast to increase at an annual growth rate of 3.8 percent between 1984 and 1996, from 8.2 million to 12.9 million. The number of aircraft contacted is projected to increase at an annual rate of only 0.5 percent, from 8.2 million in 1984 to 8.7 million in 1996.


TOTAL FLIGHT SERVICES
Fiscal Years
BY TYPE OF SERVICE PROVIDER
Pilot Briefs
Flight Plans
Aircraft Contacted
Fiscal Years

CHAPTER VIII

TERMINAL AREA FORECASTS

LARGE HUBS

Chapter VIII

Terminal Area Forecasts – Large Hubs

The Terminal Area Forecasts (TAF) is a set of forecasts of enplanements, aircraft operations, instrument operations and instrument approaches prepared for over 4,000 airports in the United States. The data base for the TAF includes airports with FAA towers, airports with commercial service, airports that are in the National Plan of Integrated Airport Systems and other nontowered public use airports. This chapter presents data from the TAF for: (1) the top 50 airports in the U.S. ranked by total enplanements in fiscal 1983; (2) the top 50 airports ranked by total operations in 1983; (3) forecasts of total enplanements and total operations at 27 large hub airports. Large hub airports are defined as those airports enplaning one percent or more of the total passenger enplanements in fiscal 1983.

REVIEW OF 1983

Top 50 Airports

In fiscal 1983, Chicago O'Hare was the busiest airport in the U.S. when ranked both by total enplanements (air carrier, commuter and air taxi) and total aircraft operations. Chicago had 19.1 million passenger enplanements and 659 thousand aircraft operations. Atlanta was the second busiest airport with 18.8 million enplanements and 600 thousand operations. In terms of total enplanements, Chicago and Atlanta reversed ranks in 1983, relative to 1981 and 1982. Other airports in the top 5 ranked by enplanements in 1983 were Los Angeles International, New York Kennedy, and Dallas-Fort Worth. These were ranked third, fourth, and fifth in total enplanements and third, fourteenth and seventh, respectively, in total operations. Van Nuys, California was the busiest general aviation airport and the only general aviation airport that was ranked among the top 5 airports based on total operations. Additional data for these and other airports among the top 50 airports are presented in tabular form on pages 63 and 64.

In FY 1983, the top 50 commercial airports accounted for 80.6 percent of the total number of enplanements (air carrier, commuter and air taxi) which occurred at 545 airports with 2,500 or more enplanements. In fact, the top 5 airports (Chicago, Atlanta, Los Angeles, New York Kennedy and Dallas-Fort Worth) accounted for over 24 percent and the top 20 airports accounted for over 58 percent of total enplanements.

FORECASTS

Large Hub Airports

Using 1983 as the base year, forecasts for airports in the TAF were generated for each year to 1995. The total enplanements and related operations forecasts for the 27 large hub airports for fiscal years 1990 and 1995 are presented on pages 66 and 67. By 1995, Chicago O'Hare is expected to reach 36.2 million enplanements and Atlanta, 33.3 million.

TOP 50 AIRPORTS RANKED BY 1983 TOTAL PASSENGER ENPLANEMENTS

Airport	Total Enplanements 1/ (000)	Percent 2/	Cumulative Percent
Chicago O'Hare	19,116	5.8	5.8
Atlanta	18,811	5.7	11.5
Los Angeles Int'l	15,991	4.9	16.4
New York Kennedy	13,240	4.0	20.4
Dallas-Fort Worth	12,861	3.9	24.3
Denver	11,936	3.6	27.9
San Francisco Int'l	10,364	3.2	31.1
Miami	9,153	2.8	33.9
New York LaGuardia	9,076	2.8	36.7
Boston	8,617	2.6	39.3
St. Louis Int'l	7,626	2.3	41.6
Newark	7,584	2.3	43.9
Honolulu	7,193	2.2	46.1
Washington National	6,805	2.1	48.2
Houston Intercontinental	6,402	2.0	50.2
Minneapolis	5,909	1.8	52.0
Pittsburgh	5,644	1.7	53.7
Seattle-Tacoma	5,272	1.6	55.3
Detroit	5,075	1.6	56.9
Las Vegas	4,809	1.5	58.4
Phoenix	4,675	1.4	59.8
Philadelphia	4,544	1.4	61.2
Tampa	3,838	1.2	62.4
Orlando	3,767	1.2	63.6
Charlotte	3,572	1.1	64.7
Salt Lake City	3,318	1.0	65.7
San Diego	3,113	1.0	66.7
New Orleans	3,063	0.9	67.6
Dallas Love Field	2,930	0.9	68.5
Cleveland	2,745	0.8	69.3
Houston Hobby	2,713	0.8	70.1
Ft. Lauderdale	2,632	0.8	70.9
Baltimore	2,606	0.8	71.7
Kansas City	2,428	0.7	72.4
Memphis	2,413	0.7	73.1
San Juan	2,408	0.7	73.8
Portland	2,169	0.7	74.5
San Antonio	1,867	0.6	75.1
Cincinnati	1,838	0.6	75.7
Palm Beach	1,793	0.5	76.2
San Jose	1,710	0.5	76.7
Buffalo	1,692	0.5	77.2
Kahului	1,668	0.5	77.7
Milwaukee	1,506	0.5	78.2
Oakland	1,467	0.4	78.6
Columbus	1,461	0.4	79.0
Albuquerque	1,445	0.4	79.4
Windsor Locks	1,440	0.4	79.8
Burbank	1,425	0.4	80.2
Indianapolis	1,423	0.4	80.6

1/ Includes U.S. certificated route air carriers, foreign flag carriers, supplementals, air commuters, and air taxis.

2/ Based on 327.266 million passenger enplanements at 545 airports with 2,500 or more enplanements in FY 1983.

Source: FAA Terminal Area Forecasts FY 85-95.

TOP 50 TOWERED AIRPORTS RANKED BY 1983 TOTAL AIRCRAFT OPERATIONS

Airport	Total Operations (000)	Percent 1/	Cumulative Percent
Chicago O'Hare	659.3	1.2	1.2
Atlanta	599.5	1.1	2.3
Los Angeles Int'l	498.1	0.9	3.2
Van Nuys	485.7	0.9	4.1
Denver Stapleton	466.8	0.9	5.0
Santa Ana	453.4	0.9	5.9
Dallas-Fort Worth	426.8	0.8	6.7
Long Beach	417.3	0.8	7.5
Seattle Boeing Field	390.9	0.7	8.2
Oakland	360.6	0.7	8.9
Denver Arapahoe	355.6	0.7	9.6
San Francisco	349.0	0.7	10.3
St. Louis Lambert	343.3	0.6	10.9
New York Kennedy	342.1	0.6	11.5
Phoenix Sky Harbor	341.2	0.6	12.1
Miami Int'l	341.2	0.6	12.7
New York LaGuardia	340.4	0.6	13.3
Boston	340.3	0.6	13.9
Anchorage Merrill Field	331.3	0.6	14.5
Houston Intercontinental	330.9	0.6	15.1
Washington National	327.4	0.6	15.7
Honolulu	326.7	0.6	16.3
Philadelphia	321.4	0.6	16.9
San Jose	316.9	0.6	17.5
Pittsburgh	315.0	0.6	18.1
Ft. Worth Meacham	312.8	0.6	18.7
Houston Hobby	309.8	0.6	19.3
Miami Tamiami	305.2	0.6	19.9
Dallas Love Field	302.1	0.6	20.5
Minneapolis	300.3	0.6	21.1
Las Vegas	297.2	0.6	21.7
Memphis	292.5	0.5	22.2
Teterboro	286.2	0.5	22.7
Oakland	285.9	0.5	23.2
Charlotte	280.7	0.5	23.7
Salt Lake City	273.1	0.5	24.2
Tampa	272.1	0.5	24.7
Detroit Metro	271.4	0.5	25.2
Torrance	270.1	0.5	25.7
Newark	263.9	0.5	26.2
Caldwell	263.6	0.5	26.7
Hayward	249.1	0.5	27.2
Phoenix Deer Valley	243.8	0.5	27.7
Baltimore	239.1	0.4	28.1
Miami Opa Locka	239.0	0.4	28.5
Ft. Lauderdale Hollywood	236.4	0.4	28.9
Tucson	234.0	0.4	29.3
Columbus	230.7	0.4	29.7
Islip MacArthur	229.5	0.4	30.1
West Palm Beach	226.5	0.4	30.5

1/ Based on 53.321 million aircraft operations recorded at 392 FAA-operated airport traffic control towers in FY 1983.

Source: FAA Terminal Area Forecasts FY 84-95.

Total aircraft operations will reach 835 thousand at Chicago and 765 thousand at Atlanta. These increases will come from growth in the U.S. economy as a whole and local airport development which includes the addition of new gates. Chicago and Atlanta are expected to remain the two busiest airports in the country.

Some airports (Charlotte and Newark, for example) will have reasonably high enplanement growth, resulting from general economic growth and managerial decisions by air carriers to use these airports as hubs.

Other airports (Los Angeles, New York LaGuardia and Washington National, for example) are expected to experience relatively slow growth because of capacity, environmental or policy constraints. The average annual growth rates expected for the large hub airports for operations and enplanements for the 1983 to 1995 period are indicated in graphic form on page 68. Because of the differences in the growth rates among airports, the relative rankings of these 27 hub airports in 1995 will differ from the rankings observed in 1983. For example, Denver will rank third in 1995, compared to sixth in 1983. The most significant change will take place in Charlotte's rank. This airport is expected to change from twenty-fifth in 1983 to eighteenth in 1995. At the other extreme, Washington National Airport is expected to fall from fourteenth place in 1983 to twenty-first place in 1995 when ranked by total enplanements. Large shifts could also occur at other airports if a major airline decides to use a small or medium hub airport as a primary hub. Enplanements and operations forecasts for the large hub airports can be found on pages 66 and 67.

TOTAL PASSENGER ENPLANEMENTS

AT LARGE HUB AIRPORTS*

(In Thousands)

Airport	FY 1983	FY 1990	FY 1995
Chicago O'Hare	19,116	30,201	36,202
Atlanta	18,810	26,070	33,262
Los Angeles	15,990	18,582	19,853
New York Kennedy	13,239	16,413	17,051
Dallas-Ft. Worth	12,860	18,223	22,596
Denver	11,935	19,702	25,493
San Francisco	10,363	11,840	12,713
Miami	9,152	12,194	15,337
New York LaGuardia	9,076	10,726	11,674
Boston	8,617	11,653	14,195
St. Louis	7,626	10,182	12,156
Newark	7,584	11,784	14,264
Honolulu	7,193	9,670	11,766
Washington National	6,804	7,375	7,553
Houston	6,402	8,998	11,379
Minneapolis	5,908	8,343	10,623
Pittsburgh	5,664	9,298	12,420
Seattle-Tacoma	5,272	6,590	8,472
Detroit Metro	5,074	6,974	8,747
Las Vegas	4,308	5,939	7,201
Phoenix	4,675	7,394	9,480
Philadelphia	4,544	6,117	7,526
Tampa	3,838	5,282	6,867
Orlando	3,767	5,592	7,344
Charlotte	3,571	6,730	9,414
Salt Lake City	3,317	4,246	5,176
San Diego	3,113	4,599	5,721

* Includes U.S. certificated route air carriers, foreign flag carriers, supplementals, air commuters and air taxis.

Source: FAA Terminal Area Forecasts FY 85-95.

TOTAL AIRCRAFT OPERATIONS

AT LARGE HUB AIRPORTS*

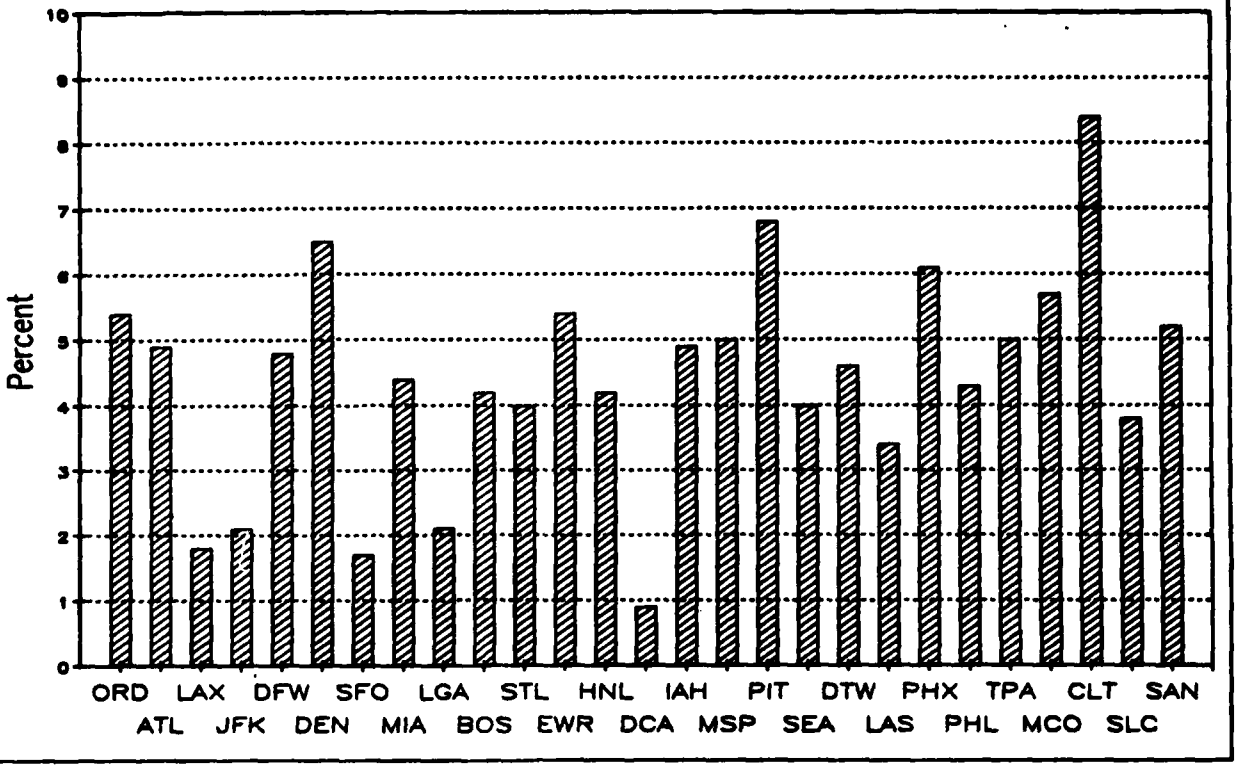
(In Thousands)

Airport	FY 1983	FY 1990	FY 1995
Chicago O'Hare	659	770	835
Atlanta	599	709	765
Los Angeles	498	621	629
New York Kennedy	342	364	370
Dallas-Ft. Worth	426	518	543
Denver	466	541	602
San Francisco	349	394	395
Miami	341	395	438
New York LaGuardia	340	338	335
Boston	340	425	469
St. Louis	343	425	460
Newark	263	342	350
Honolulu	326	396	450
Washington National	327	381	405
Houston	330	402	439
Minneapolis	300	384	455
Pittsburgh	314	337	425
Seattle-Tacoma	209	236	264
Detroit Metro	271	363	420
Las Vegas	297	366	438
Phoenix	341	433	491
Philadelphia	321	388	444
Tampa	272	333	365
Orlando	159	205	232
Charlotte	280	371	414
Salt Lake City	273	331	428
San Diego	139	177	205

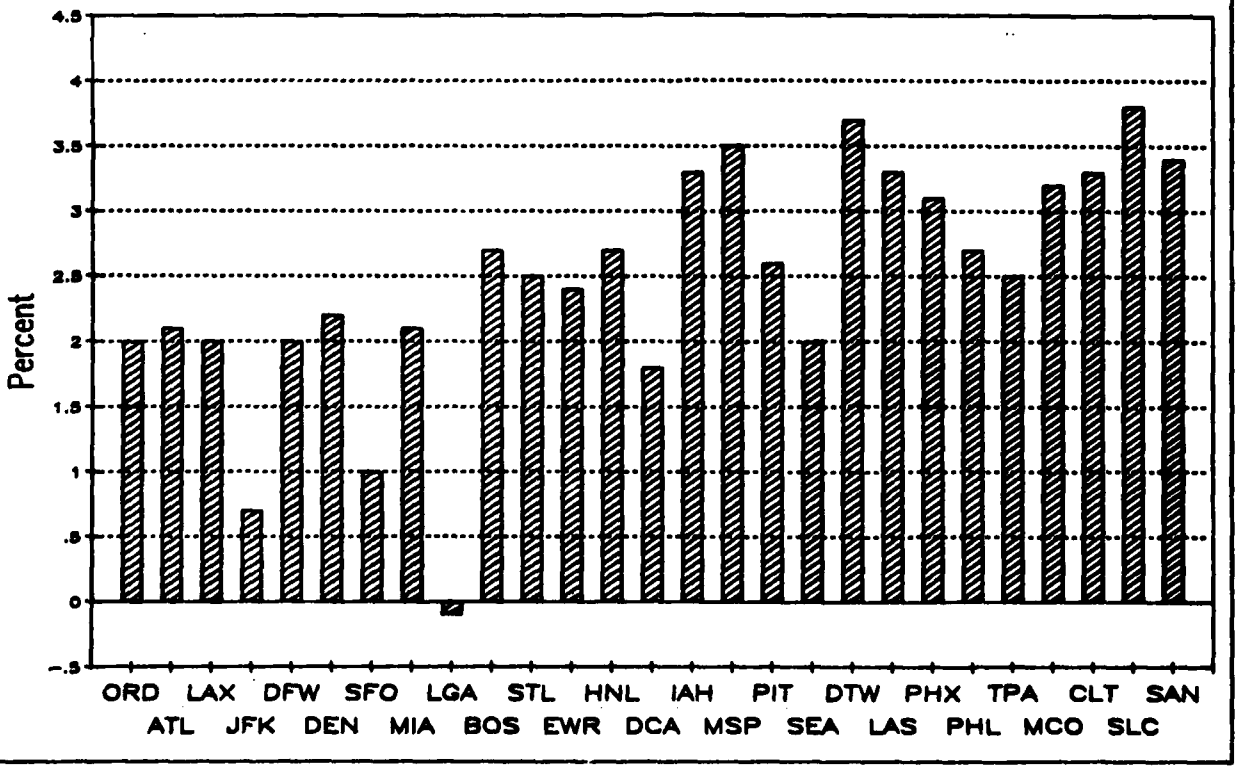
* Includes total itinerant and local operations performed by commercial air carriers, air taxis, military and general aviation.

Source: FAA Terminal Area Forecasts FY 85-95.

PASSENGER ENPLANEMENTS AT LARGE HUB AIRPORTS
AVERAGE ANNUAL GROWTH RATES FY 1983–1995



AIRCRAFT OPERATIONS AT LARGE HUB AIRPORTS
AVERAGE ANNUAL GROWTH RATES FY 1983–1995



CHAPTER IX

YEAR-BY-YEAR DATA FOR FAA AVIATION FORECASTS: FISCAL YEARS 1985-1996

Chapter IX

Year-by-Year Data for FAA Aviation Forecasts

Fiscal Years 1985-1996

Chapter IX provides the detailed data for the National Aviation and FAA workload series forecasted by the FAA Office of Aviation Policy and Plans. The addition of newly certificated carriers reporting to the CAB since deregulation, the reporting of San Juan and Virgin Island traffic as domestic, beginning January 1, 1981, and the duplication of air carrier and commuter traffic in Tables 2 and 4 should be noted. A list of airlines included in the air carrier forecast data base can be found in Appendices A and B.

TABLE 1

UNITED STATES COMMERCIAL AIR CARRIERS
SCHEDULED PASSENGER TRAFFIC(1)

	Revenue Passenger Enplanements (millions)			Revenue Passenger Miles (billions)		
Fiscal Year	Total	Domestic	International	Total	Domestic	International
Historical*						
1980	312.0	287.8	24.2	258.6	204.4	54.2
1981	295.9	274.7	21.2	249.4	199.1	50.3
1982	305.8	286.0	19.8	258.7	209.5	49.2
1983	327.9	306.7	21.2	278.6	225.8	52.8
1984E	356.4	333.0	23.4	300.7	240.5	60.2
Forecast						
1985	383.4	358.0	25.4	321.5	257.2	64.3
1986	398.6	371.9	26.7	335.6	267.8	67.8
1987	420.8	392.8	28.0	354.9	283.8	71.1
1988	442.5	413.4	29.1	374.0	299.8	74.2
1989	464.8	434.3	30.5	393.6	316.2	77.5
1990	482.3	450.3	32.0	410.7	329.0	81.7
1991	506.6	472.8	33.8	433.0	346.5	86.5
1992	529.4	494.0	35.4	454.2	363.4	90.8
1993	552.1	515.1	37.0	475.2	380.2	95.0
1994	575.8	537.3	38.5	496.5	397.5	99.0
1995	595.0	554.6	40.4	515.9	411.6	104.3
1996	622.6	580.2	42.4	541.7	432.2	109.5

*Source: Civil Aeronautics Board

(1) Includes unduplicated passenger traffic reported by U.S. certificated air carriers and commuter carriers holding 401 certificates.

TABLE 2

UNITED STATES CERTIFICATED ROUTE AIR CARRIER
SCHEDULED PASSENGER TRAFFIC(1)

Fiscal Year	Revenue Passenger Enplanements (millions)			Revenue Passenger Miles (billions)		
	Total	Domestic	International	Total	Domestic	International
Historical*						
1980	302.3	278.2	24.1	257.4	203.2	54.2
1981	285.5	264.3	21.2	248.2	197.9	50.3
1982	292.5	272.8	19.7	257.0	207.8	49.2
1983	311.4	290.3	21.1	276.3	223.5	52.8
1984 E	336.4	313.2	23.2	297.9	237.7	60.2
Forecast						
1985	361.6	336.4	25.2	318.3	254.0	64.3
1986	374.6	348.1	26.5	332.0	264.2	67.8
1987	394.5	366.7	27.8	350.9	279.8	71.1
1988	414.0	385.1	28.9	369.6	295.4	74.2
1989	434.0	403.8	30.2	388.8	311.3	77.5
1990	449.4	417.7	31.7	405.4	323.7	81.7
1991	471.0	437.5	33.5	427.2	340.8	86.4
1992	491.1	456.0	35.1	447.8	357.1	90.7
1993	511.1	474.5	36.6	468.3	373.4	94.9
1994	531.9	493.8	38.1	489.0	390.1	98.9
1995	548.4	508.4	40.0	507.8	403.7	104.1
1996	572.8	530.8	42.0	532.9	423.6	109.3

*Source: Civil Aeronautics Board

(1) Includes passenger traffic reported by those air carriers listed in Appendix A. Also includes the following traffic of commuter carriers holding Section 401 certificates and duplicated in Table 5:

	Enplanements (Millions)	RPM's (Billions)		Enplanements (Millions)	RPM's (Billions)
1980	4.199	.627	1983	2.410	.456
1981	5.642	.906	1984E	3.153	.616
1982	4.478	.732			

TABLE 3

TOTAL LARGE JET AIRCRAFT IN
U.S. COMMERCIAL AIRLINE SERVICE
BY AIRCRAFT TYPE

As of January 1	Total	Narrow Body			Wide Body		
		2 Engine	3 Engine	4 Engine	2 Engine	3 Engine	4 Engine
Historical*							
1980	2,394	615	1,029	330	12	227	131
1981	2,475	663	1,097	297	19	255	144
1982	2,483	730	1,096	218	25	267	147
1983	2,556	839	1,057	199	43	277	141
1984E 1/	2,745	962	1,122	161	83	271	146
Forecast							
1985	2,830	1,076	1,123	107	94	279	151
1986	2,957	1,204	1,087	115	120	279	152
1987	3,070	1,329	1,043	121	138	281	153
1988	3,174	1,436	1,004	125	168	284	157
1989	3,255	1,519	954	127	206	284	165
1990	3,343	1,614	897	129	245	284	174
1991	3,429	1,711	836	129	284	284	185
1992	3,543	1,807	805	129	321	284	197
1993	3,653	1,890	771	130	368	284	210
1994	3,760	1,968	736	131	410	288	227
1995	3,867	2,045	700	127	457	294	244
1996	3,966	2,122	662	119	507	294	262

*Source: FAA Aircraft Utilization and Propulsion Reliability Report

1/ 1983 and 1984 totals do not include Braniff and Altair fleets

TABLE 4

TOTAL AIRBORNE HOURS
U.S. COMMERCIAL AIRLINE LARGE JET AIRCRAFT
BY AIRCRAFT TYPE
(millions)

		Narrow Body			Wide Body		
Fiscal Year	Total	2 Engine	3 Engine	4 Engine	2 Engine	3 Engine	4 Engine
Historical*							
1980	6.72	1.59	3.02	.79	.04	.75	.53
1981	6.25	1.68	2.80	.47	.06	.74	.50
1982	6.30	1.87	2.68	.35	.07	.80	.53
1983	6.62	2.21	2.65	.31	.16	.77	.52
1984	7.45	2.61	2.89	.33	.28	.79	.55
Forecast							
1985	7.54	2.75	2.89	.25	.29	.80	.56
1986	7.71	2.94	2.80	.26	.35	.80	.56
1987	7.94	3.17	2.70	.27	.43	.80	.57
1988	8.17	3.39	2.58	.28	.53	.81	.58
1989	8.30	3.58	2.45	.28	.66	.81	.60
1990	8.57	3.78	2.31	.28	.79	.79	.62
1991	8.78	3.99	2.15	.28	.92	.79	.65
1992	9.06	4.22	2.07	.27	1.04	.78	.68
1993	9.34	4.40	1.98	.27	1.20	.78	.71
1994	9.60	4.57	1.89	.27	1.34	.78	.75
1995	9.86	4.74	1.80	.26	1.50	.78	.78
1996	10.12	4.90	1.70	.25	1.67	.78	.82

*Source: FAA Aircraft Utilization and Propulsion Reliability Report.

TABLE 5

COMMUTER AIRLINES PASSENGER TRAFFIC (1)
(millions)

Fiscal Year	Revenue Passenger Enplanements			Revenue Passenger Miles		
	Total	48 States (2)	Hawaii/ Puerto Rico/ Virgin Island	Total	48 States (2)	Hawaii/ Puerto Rico/ Virgin Island
Historical*						
1980	13.9	12.4	1.5	1,783.9	1,676.1	107.8
1981	16.0	14.2	1.8	2,140.8	2,004.0	136.8
1982 (3)	17.8	15.6	2.2	2,465.7	2,278.3	187.4
1983	20.3	17.8	2.5	2,943.2	2,703.1	240.1
1984E	23.2	20.3	2.9	3,435.6	3,156.7	278.9
Forecast (4)						
1985	23.7	20.4	3.3	3,499.0	3,182.2	316.8
1986	26.1	22.5	3.6	3,923.1	3,577.5	345.6
1987	28.6	24.7	3.9	4,375.8	4,001.4	374.4
1988	31.0	26.8	4.2	4,825.2	4,422.0	403.2
1989	33.5	29.0	4.5	5,304.0	4,872.0	432.0
1990	35.8	31.0	4.8	5,761.8	5,301.0	460.8
1991	38.7	33.6	5.1	6,336.0	5,846.4	489.6
1992	41.6	36.2	5.4	6,925.8	6,407.4	518.4
1993	44.6	38.9	5.7	7,549.2	7,002.0	547.2
1994	47.7	41.7	6.0	8,207.1	7,631.1	576.0
1995	50.7	44.4	6.3	8,863.2	8,258.4	604.8
1996	54.2	47.6	6.6	9,630.0	8,996.4	633.6

E - Estimate *Source: Civil Aeronautics Board

(1) Includes the traffic of commuter carriers holding Section 401 certificates and not reporting on CAB Form 298-C. The following traffic is duplicated in Table 1:

	Enplanements (Millions)	RPM's (Millions)		Enplanements (Millions)	RPM's (Millions)
1980	4.199	627.4	1983	2.410	455.5
1981	5.642	906.2	1984E	3.153	615.6
1982	4.478	732.1			

(2) Forecasts exclude Alaska Commuter Traffic and in foreign territories.
(3) Fiscal year 1982 excludes Altair because of conversion to all jet fleet.
(4) Forecasts exclude Air Wisconsin and Empire Airlines because of predominance of jet aircraft in their fleets.

TABLE 6

TOTAL COMMUTER PASSENGER AIRCRAFT IN
U.S. COMMUTER AIRLINE SERVICE
BY AIRCRAFT TYPE 1/

As of January 1	Total	Less Than 15 Seats	15-19 Seats	20-40 Seats	More than 40 Seats
Historical*					
1980	1313	734	383	99	97
1981	1388	716	433	117	122
1982	1494	701	493	125	175
1983	1421	569	533	147	172
1984E	1531	560	626	160	185
Forecast					
1985	1659	548	719	193	199
1986	1733	538	736	241	218
1987	1746	530	717	270	229
1988	1826	521	742	316	247
1989	1900	511	775	337	277
1990	1968	500	804	358	306
1991	2059	492	821	391	355
1992	2138	479	826	425	408
1993	2212	468	814	462	468
1994	2289	455	801	503	530
1995	2356	438	783	545	590
1996	2413	420	770	579	644

*Source: FAA Aircraft Utilization and Propulsion Reliability Report

E = Estimate

1/ Includes only aircraft with 60 seats or less. Aircraft also included in general aviation fleet in Table 6.

TABLE 7

ESTIMATED ACTIVE GENERAL AVIATION
AIRCRAFT BY TYPE OF AIRCRAFT 1/
(thousands)

As of January 1	Total	Fixed Wing				Rotorcraft		Balloons/ Dirigibles/ Gliders
		Piston						
		Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine	
Historical*								
1980	210.3	168.4	25.1	3.5	2.7	3.1	2.7	4.8
1981	211.0	168.4	24.6	4.1	3.0	2.8	3.2	4.9
1982	213.2	167.9	25.5	4.7	3.2	3.3	3.7	5.0
1983	209.8	164.2	25.0	5.2	4.0	2.4	3.7	5.2
1984	213.3	166.4	25.1	5.5	3.9	2.5	4.0	5.9
Forecast								
1985	210.2	161.9	25.1	6.0	4.2	2.4	4.5	6.1
1986	214.5	164.0	25.6	6.6	4.6	2.4	4.9	6.4
1987	218.9	166.1	26.5	7.1	4.9	2.3	5.3	6.7
1988	223.6	168.4	27.5	7.6	5.2	2.3	5.6	7.0
1989	228.7	170.8	28.8	8.1	5.5	2.3	5.9	7.3
1990	235.0	174.8	29.6	8.6	5.7	2.3	6.3	7.7
1991	241.9	179.6	30.5	9.1	5.9	2.2	6.6	8.0
1992	249.0	184.2	31.4	9.6	6.2	2.2	7.1	8.3
1993	255.7	188.8	32.2	10.1	6.5	2.1	7.4	8.6
1994	261.7	192.5	33.0	10.5	6.7	2.1	8.0	8.9
1995	266.8	195.6	33.7	10.9	6.9	2.1	8.3	9.3
1996	270.5	197.4	34.4	11.4	7.1	2.0	8.6	9.6

*Source: FAA Statistical Handbook of Aviation
Detail may not add to total because of independent rounding.
An active aircraft must have a current registration and it must have been flown at least 1 hour during the previous calendar year.

1/ Includes commuter aircraft shown in Table 6.

TABLE 8
ESTIMATED ACTIVE GENERAL AVIATION
AIRCRAFT BY FAA REGION 1/
(thousands)

As of January 1	Total	FAA Region								
		ANE	AEA	ASO	AGL	ACE	ASW	AWP	ANM	AAL
Historical*										
1980	210.3	7.4	22.9	29.7	39.7	14.1	30.9	35.3	24.4	5.9
1981	211.0	7.4	23.0	29.8	39.9	14.1	31.0	35.4	24.5	5.9
1982**	213.2	7.0	21.2	32.1	40.0	14.0	32.2	36.7	23.8	6.2
1983	209.8	7.7	22.8	32.2	37.0	12.8	34.0	34.4	22.1	6.8
1984	213.3	7.8	23.2	32.7	37.6	13.0	34.6	35.0	22.5	6.9
Forecast										
1985	210.2	7.7	22.9	32.2	37.0	12.8	34.1	34.5	22.2	6.8
1986	214.5	7.9	23.3	32.9	37.8	13.1	34.8	35.2	22.6	6.9
1987	218.9	8.0	23.8	33.6	38.6	13.3	35.5	35.9	23.1	7.1
1988	223.6	8.2	24.3	34.3	39.4	13.6	36.3	36.7	23.6	7.2
1989	228.7	8.4	24.9	35.1	40.3	13.9	37.1	37.5	24.1	7.4
1990	235.0	8.6	25.6	36.0	41.4	14.3	38.1	38.6	24.8	7.6
1991	241.9	8.9	26.3	37.2	42.6	14.7	39.2	38.7	25.5	7.8
1992	249.0	9.0	27.1	38.2	43.9	15.2	40.4	40.9	26.3	8.0
1993	255.7	9.4	27.8	39.2	45.0	15.6	41.5	42.0	27.0	8.2
1994	261.7	9.6	28.5	40.2	46.1	15.9	42.4	42.9	27.6	8.5
1995	266.8	9.8	29.0	40.9	47.0	16.2	43.3	43.8	28.2	8.6
1996	270.5	9.9	29.4	41.5	47.7	16.5	43.9	44.4	28.5	8.7

*Source: FAA Statistical Handbook of Aviation
Detail may not add to total because of independent rounding.
**Regional totals were adjusted so that they sum to the national total.

1/ Includes commuter aircraft shown in Table 5.

TABLE 9

ESTIMATED HOURS FLOWN IN
GENERAL AVIATION BY TYPE OF AIRCRAFT
(millions)

		Fixed Wing				Rotorcraft		
		Piston						Balloons
Fiscal Year	Total	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine	Dirigibles Gliders
Historical*								
1980	41.6	28.8	6.6	2.1	1.3	.8	1.6	.4
1981	41.0	27.9	6.4	2.2	1.5	.9	1.8	.4
1982	37.8	25.2	6.0	2.1	1.6	.7	1.8	.4
1983	36.6	23.8	5.8	2.2	1.7	.6	2.1	.4
1984E	35.6	22.8	5.9	2.4	1.6	.6	1.9	.4
Forecast								
1985	36.7	23.2	6.1	2.5	1.8	.6	2.1	.4
1986	38.0	23.8	6.3	2.7	1.8	.5	2.4	.5
1987	39.2	24.4	6.5	2.8	1.9	.5	2.6	.5
1988	40.5	25.2	6.7	2.9	2.0	.5	2.7	.5
1989	42.0	26.3	6.8	3.0	2.1	.4	2.9	.5
1990	43.7	27.4	6.9	3.2	2.1	.4	3.1	.6
1991	45.3	28.5	7.0	3.3	2.2	.4	3.3	.6
1992	46.8	29.5	7.2	3.4	2.3	.3	3.5	.6
1993	48.3	30.6	7.3	3.5	2.3	.3	3.7	.6
1994	49.4	31.2	7.4	3.6	2.4	.3	3.9	.6
1995	50.4	31.5	7.5	3.8	2.5	.3	4.1	.7
1996	51.5	32.0	7.6	4.0	2.6	.3	4.3	.7

E - Estimate
*Source: FAA Statistical Handbook of Aviation
Detail may not add to total because of independent rounding.

TABLE 10

ESTIMATED ACTIVE ROTORCRAFT FLEET
AND HOURS FLOWN

As of	Active Fleet In Thousands			Hours Flown In Millions		
January 1	Total	Piston	Turbine	Total	Piston	Turbine
Historical*						
1980	5.8	3.1	2.7	2.4	.8	1.6
1981	6.0	2.8	3.2	2.7	.9	1.8
1982	7.0	3.3	3.7	2.5	.7	1.8
1983	6.1	2.4	3.7	2.7	.6	2.1
1984	6.5	2.5	4.0	2.5	.6	1.9
Forecast						
1985	6.9	2.4	4.5	2.7	.6	2.1
1986	7.3	2.4	4.9	2.9	.5	2.4
1987	7.6	2.3	5.3	3.1	.5	2.6
1988	7.9	2.3	5.6	3.2	.5	2.7
1989	8.2	2.3	5.9	3.3	.4	2.9
1990	8.6	2.3	6.3	3.5	.4	3.1
1991	8.8	2.2	6.6	3.7	.4	3.3
1992	9.3	2.2	7.1	3.8	.3	3.5
1993	9.5	2.1	7.4	4.0	.3	3.7
1994	10.1	2.1	8.0	4.2	.3	3.9
1995	10.4	2.1	8.3	4.4	.3	4.1
1996	10.6	2.0	8.6	4.6	.3	4.3

*Source: FAA Statistical Handbook of Aviation

TABLE 11

ESTIMATED FUEL CONSUMED BY
GENERAL AVIATION BY TYPE OF AIRCRAFT
(millions of gallons)

		Fixed Wing				Rotorcraft		
		Piston						
Fiscal Year	Total	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine	Other
Historical*								
1980	1,291.0	287.6	231.1	223.9	474.6	13.3	59.7	.8
1981	1,257.3	276.5	206.1	219.6	483.2	13.3	57.8	.8
1982	1,314.2	251.2	197.4	230.8	562.1	9.7	62.5	.5
1983	1,113.9	235.1	189.3	230.9	396.2	7.8	54.2	.4
1984E	1,253.3	227.7	194.8	255.2	504.7	8.2	62.2	.5
Forecast								
1985	1,399.9	230.6	199.9	272.1	614.8	8.2	73.7	.6
1986	1,455.1	236.5	205.7	291.2	632.3	7.2	81.6	.6
1987	1,515.2	243.3	212.3	304.9	658.7	6.9	88.5	.6
1988	1,579.6	250.9	218.8	315.9	693.8	6.8	92.8	.6
1989	1,646.1	261.9	222.9	326.9	728.9	5.8	98.9	.8
1990	1,695.4	273.2	226.2	346.2	737.7	5.4	105.9	.8
1991	1,755.8	283.4	229.5	359.9	764.0	5.3	112.3	.9
1992	1,827.1	294.1	235.3	370.9	799.1	4.5	122.3	.9
1993	1,866.1	304.3	239.4	381.9	807.9	4.2	127.5	.9
1994	1,919.1	310.5	242.7	392.9	834.3	4.1	133.6	1.0
1995	1,987.1	313.9	245.9	412.1	869.5	4.1	140.6	1.0
1996	2,058.1	317.7	249.2	434.1	904.6	4.0	147.5	1.0

E - Estimate
*Source: FAA APO Estimates

TABLE 12

ESTIMATED FUEL CONSUMED BY
UNITED STATES DOMESTIC CIVIL AVIATION
(millions of gallons)

Fiscal Year	Total Jet Fuel and Aviation Gasoline	Jet Fuel			Aviation Gasoline		
		Total	Air Carrier	General Aviation	Total	Air Carrier	General Aviation
Historical*							
1980	10,619	10,073	9,296	777	546	13	533
1981	9,804	9,296	8,585	761	508	11	497
1982	9,720	9,253	8,398	855	467	9	458
1983	9,731	9,291	8,610	681	440	7	433
1984E	10,679	10,242	9,420	822	437	6	431
Forecast							
1985	10,905	10,461	9.500	961	444	5	439
1986	11,170	10,715	9,710	1,005	455	5	450
1987	11,429	10,962	9,910	1,052	467	4	463
1988	11,702	11,222	10,120	1,102	480	3	477
1989	11,927	11,434	10,280	1,154	493	2	491
1990	12,197	11,689	10,500	1,189	508	2	506
1991	12,427	11,906	10,670	1,236	521	2	519
1992	12,679	12,143	10,850	1,293	536	2	534
1993	12,868	12,317	11,000	1,317	551	2	549
1994	13,081	12,521	11,160	1,361	560	2	558
1995	13,339	12,772	11,350	1,422	567	2	565
1996	13,590	13,016	11,530	1,486	574	2	572

E - Estimate

*Source: FAA APO Estimates

Domestic civil aviation is defined for purposes of the table to include all civil aircraft flights which originate and terminate within the 50 states. Estimates of fuel consumed by airframe and aircraft engine manufacturers, whether for flight testing, or ground testing are not shown here because they are not available for the domestic industry as a whole and estimates cannot be developed with any assurance of accuracy. Estimates of fuel consumed by the charter and contract carriers are included in the "Air Carrier" columns. It should also be noted that general aviation fuel consumption is not reported and historical series are estimates.

TABLE 13

TOTAL ITINERANT AND LOCAL AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	Itinerant	Local	Number of Towers
Historical*				
1980	66.2	44.3	21.9	432
1981	61.6	42.0	19.5	433
1982	50.6	35.9	14.7	375
1983	53.4	38.1	15.3	390
1984E	56.9	41.0	15.9	399
Forecast				
1985	59.5	42.9	16.6	399
1986	62.9	45.2	17.7	399
1987	66.5	47.5	19.0	399
1988	70.6	50.2	20.4	399
1989	74.9	53.0	21.9	399
1990	79.9	56.2	23.7	399
1991	82.1	57.7	24.4	399
1992	84.3	59.1	25.2	399
1993	86.5	60.6	25.9	399
1994	88.5	61.9	26.6	399
1995	90.1	62.8	27.3	399
1996	91.9	64.0	27.9	399

*Source: FAA Air Traffic Activity.
1982-1984 operations reflect the temporary closures of FAA Air Traffic Control Towers. Detail may not add to total because of independent rounding.
An aircraft operation is defined as an aircraft arriving at or a departure from an airport with FAA traffic control service. A local operation is performed by an aircraft that: operates in the local traffic pattern or within sight of the tower; is known to be departing for or arriving from flight in local practice areas; or executes simulated instrument approaches or low passes at the airport. All aircraft arrivals and departures other than local (as defined above) are classified as itinerant operations.

TABLE 14

ITINERANT AIRCRAFT OPERATIONS AT AIRPORTS WITH
FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	Air Carrier	Air Taxi/ Commuter	General Aviation	Military
Historical*					
1980	44.3	10.1	4.6	28.3	1.2
1981	42.0	9.5	4.9	26.4	1.2
1982	35.9	9.0	5.1	20.7	1.1
1983	38.1	9.7	5.9	21.3	1.2
1984E	41.0	10.9	6.6	22.3	1.2
Forecast					
1985	42.9	11.2	7.2	23.3	1.2
1986	45.2	11.4	7.6	25.0	1.2
1987	47.5	11.6	7.9	26.8	1.2
1988	50.2	11.9	8.3	28.8	1.2
1989	53.0	12.2	8.6	31.0	1.2
1990	56.2	12.4	9.0	33.6	1.2
1991	57.7	12.6	9.4	34.5	1.2
1992	59.1	12.9	9.7	35.3	1.2
1993	60.6	13.2	10.1	36.1	1.2
1994	61.9	13.4	10.5	36.8	1.2
1995	62.8	13.6	10.8	37.2	1.2
1996	64.0	13.9	11.2	37.7	1.2

*Source: FAA Air Traffic Activity.

Detail may not add to total because of independent rounding.
See Table 10 for definition of itinerant operations.

TABLE 15

LOCAL AIRCRAFT OPERATIONS AT AIRPORTS
WITH FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	General Aviation	Military
Historical*			
1980	21.9	20.6	1.3
1981	19.5	18.2	1.3
1982	14.7	13.5	1.2
1983	15.3	14.0	1.3
1984E	15.9	14.7	1.2
Forecast			
1985	16.6	15.4	1.2
1986	17.7	16.5	1.2
1987	19.0	17.8	1.2
1988	20.4	19.2	1.2
1989	21.9	20.7	1.2
1990	23.7	22.5	1.2
1991	24.4	23.2	1.2
1992	25.2	24.0	1.2
1993	25.9	24.7	1.2
1994	26.6	25.4	1.2
1995	27.3	26.1	1.2
1996	27.9	26.7	1.2

*Source: FAA Air Traffic Activity
Detail may not add to total because of independent rounding.
See Table 10 for definition of local operations.

TABLE 16

INSTRUMENT OPERATIONS AT AIRPORTS WITH
FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	Air Carrier	Air Taxi/ Commuter	General Aviation	Military
Historical*					
1980	38.2 (10.2)	10.6	4.1	19.3	4.1
1981	37.2 (9.6)	10.2	4.6	18.5	3.9
1982	31.6 (6.5)	9.5	4.6	13.9	3.6
1983	34.0 (7.0)	10.1	5.3	14.8	3.8
1984E	37.3 (7.8)	11.3	6.0	16.0	4.0
Forecast					
1985	39.1 (9.1)	11.6	6.4	17.1	4.0
1986	40.9 (9.9)	11.8	6.8	18.3	4.0
1987	42.3 (10.3)	12.0	7.2	19.1	4.0
1988	43.6 (10.8)	12.3	7.5	19.8	4.0
1989	45.5 (10.9)	12.6	7.9	21.0	4.0
1990	47.2 (11.1)	12.8	8.3	22.1	4.0
1991	48.7 (11.2)	13.0	8.7	23.0	4.0
1992	50.2 (11.4)	13.3	9.2	23.7	4.0
1993	51.1 (11.5)	13.5	9.5	24.1	4.0
1994	52.0 (11.5)	13.7	9.9	24.4	4.0
1995	52.9 (11.5)	13.9	10.3	24.7	4.0
1996	53.9 (11.5)	14.2	10.7	25.0	4.0

*Source: FAA Air Traffic Activity.
An instrument operation is defined as the handling by an FAA terminal traffic control facility of the arrival, departure, or overflight at an airport of an aircraft on an IFR flight plan or the provision of IFR separation to other aircraft by an FAA terminal traffic control facility.
Non-IFR instrument counts at Terminal Control Area (TCA) facilities and Stage III of expanded area radar service are included in the totals and noted in parenthesis as an information item (see Table 14).
The data include instrument operations at FAA operated military radar approach control facilities. Detail may not add to total because of independent rounding.

TABLE 17

NON-IFR INSTRUMENT OPERATIONS
(millions)

Fiscal Year	Total	Terminal Control Areas	Expanded Radar Service Area Stage III
Historical*			
1980	10.2	2.7	7.6
1981	9.6	2.8	6.8
1982	6.5	1.9	4.6
1983	7.0	2.3	4.7
1984	7.8	2.4	5.4
Forecast			
1985	9.1	2.7	6.4
1986	9.9	2.9	7.0
1987	10.3	3.2	7.1
1988	10.8	3.6	7.2
1989	10.9	3.6	7.3
1990	11.1	3.7	7.4
1991	11.2	3.7	7.5
1992	11.4	3.8	7.6
1993	11.5	3.9	7.6
1994	11.5	3.9	7.6
1995	11.5	3.9	7.6
1996	11.5	3.9	7.6

*Source: FAA Air Traffic Activity.
1982-1983 operations reflect the temporary termination of Stage III Service at 34 locations.

TABLE 18

IFR AIRCRAFT HANDLED
FAA AIR ROUTE TRAFFIC CONTROL CENTERS
(millions)

Fiscal Year	Total Aircraft Handled	Total IFR Departures	Total Overs	Aircraft Handled: Air Carrier	Aircraft Handled: Air Taxi/ Commuter	Aircraft Handled: General Aviation	Aircraft Handled: Military
Historical*							
1980	30.1	11.7	6.7	13.9	2.6	8.9	4.7
1981	29.3	11.4	6.5	12.9	2.9	8.9	4.7
1982	27.8	10.7	6.4	12.7	3.3	7.5	4.3
1983	29.4	11.3	6.8	13.3	3.7	7.8	4.6
1984E	31.6	12.3	7.0	14.1	4.4	8.3	4.9
Forecast							
1985	32.8	12.8	7.2	14.6	4.7	8.7	4.8
1986	33.9	13.3	7.3	14.9	5.1	9.1	4.8
1987	35.0	13.8	7.4	15.4	5.3	9.5	4.8
1988	36.1	14.3	7.5	15.9	5.7	9.7	4.8
1989	37.4	14.9	7.6	16.4	6.1	10.1	4.8
1990	38.3	15.3	7.7	16.7	6.5	10.3	4.8
1991	39.8	15.9	8.0	17.2	6.9	10.9	4.8
1992	41.1	16.5	8.1	17.7	7.3	11.3	4.8
1993	42.5	17.1	8.3	18.2	7.7	11.8	4.8
1994	43.6	17.6	8.4	18.7	8.1	12.0	4.8
1995	44.5	18.0	8.5	19.0	8.5	12.2	4.8
1996	45.7	18.5	8.7	19.5	8.9	12.5	4.8

*Source: FAA Air Traffic Activity.
Detail may not add to total because of independent rounding.
The aircraft handled count consists of the number of IFR departures multiplied by two plus the number of overs. This concept recognizes that for each departure there is a landing. An IFR departure is defined as an original IFR flight plan filed either prior to departure or after becoming airborne. An overflight originates outside the ARTCC area and passes through the area without landing.

AD-A151 050 FAA AVIATION FORECASTS - FISCAL YEARS 1985-1996(U) 2/2
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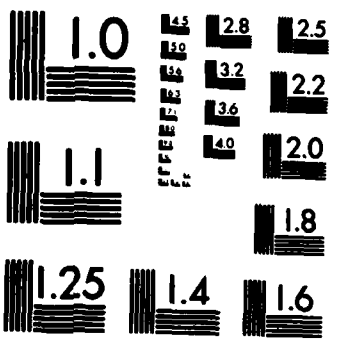

TABLE 19

IFR DEPARTURES AND OVERS
FAA AIR ROUTE TRAFFIC CONTROL CENTERS
(millions)

Fiscal Year	Air Carrier IFR Departures	Air Carrier Overs	Air Taxi/Commuter IFR Departures	Air Taxi/Commuter Overs	General Aviation IFR Departures	General Aviation Overs	Military IFR Departures	Military Overs
Historical*								
1980	4.9	4.0	1.2	0.1	3.9	1.2	1.6	1.4
1981	4.6	3.8	1.4	0.1	3.9	1.2	1.6	1.4
1982	4.4	3.8	1.6	0.1	3.2	1.2	1.5	1.3
1983	4.7	4.0	1.8	0.2	3.3	1.2	1.6	1.4
1984E	5.0	4.1	2.0	0.3	3.5	1.3	1.7	1.4
Forecast								
1985	5.2	4.2	2.2	0.3	3.7	1.3	1.7	1.4
1986	5.3	4.3	2.4	0.3	3.9	1.3	1.7	1.4
1987	5.5	4.4	2.5	0.3	4.1	1.3	1.7	1.4
1988	5.7	4.5	2.7	0.3	4.2	1.3	1.7	1.4
1989	5.9	4.6	2.9	0.3	4.4	1.3	1.7	1.4
1990	6.0	4.7	3.1	0.3	4.5	1.3	1.7	1.4
1991	6.2	4.8	3.3	0.3	4.7	1.3	1.7	1.4
1992	6.4	4.9	3.5	0.3	4.9	1.3	1.7	1.4
1993	6.6	5.0	3.7	0.3	5.1	1.3	1.7	1.4
1994	6.8	5.1	3.9	0.3	5.2	1.3	1.7	1.4
1995	6.9	5.2	4.1	0.3	5.3	1.3	1.7	1.4
1996	7.1	5.3	4.3	0.3	5.4	1.3	1.7	1.4

*Source: FAA Air Traffic Activity.

TABLE 20

TOTAL FLIGHT SERVICES, PILOT BRIEFS AND FLIGHT PLANS
ORIGINATED AT FAA FLIGHT SERVICE STATIONS
AND COMBINED STATION/TOWERS
(millions)

Fiscal Year	Total Flight Services	Pilot Briefs	Flight Plans Originated		
			Total	IFR-DVFR	VFR
Historical*					
1980	64.3	18.3	9.0	6.6	2.4
1981	62.6	17.7	8.8	6.5	2.3
1982	62.4	17.8	8.5	6.5	2.0
1983	56.9	16.0	8.1	6.3	1.9
1984	54.8	15.1	8.2	6.4	1.8
Forecast					
1985	59.6	16.6	8.9	6.8	2.1
1986	62.2	17.4	9.3	7.1	2.2
1987	65.0	18.2	9.8	7.4	2.4
1988	67.4	18.9	10.3	7.8	2.5
1989	69.8	19.7	10.7	8.1	2.6
1990	71.7	20.4	11.0	8.3	2.7
1991	73.5	20.9	11.4	8.7	2.7
1992	75.2	21.5	11.7	8.9	2.8
1993	76.8	21.9	12.1	9.3	2.8
1994	78.1	22.4	12.3	9.5	2.8
1995	79.3	22.7	12.6	9.8	2.8
1996	80.5	23.0	12.9	10.1	2.8

*Source: FAA Air Traffic Activity.
Detail may not add to total because of independent rounding.
Total Flight Services is a weighted workload measurement derived by multiplying pilot briefs and flight plans originated by two and adding the number of aircraft contacted. A flight plan may be filed orally or in writing to qualify for inclusion in the activity count. The data forecast in Tables 17 and 18 are based upon the current number of and configuration of the FSS and CS/T. Changes in their number or configuration may necessitate adjustments in the forecasts.

TABLE 21

AIRCRAFT CONTACTED AT
FAA FLIGHT SERVICE STATIONS
AND COMBINED STATION/TOWERS
(millions)

Fiscal Year	Total	IFR-DVFR	VFR	Air Carrier	Air Taxi/ Commuter	General Aviation	Military
Historical*							
1980	9.6	2.0	7.7	.4	.9	7.9	.4
1981	9.6	2.0	7.6	.4	.9	7.9	.4
1982	9.7	2.5	7.2	.4	1.2	7.7	.4
1983	8.6	2.3	6.3	.4	1.1	6.6	.4
1984	8.2	2.3	5.9	.4	1.1	6.3	.4
Forecast							
1985	8.6	2.4	6.2	.4	1.2	6.6	.4
1986	8.8	2.5	6.3	.3	1.2	6.9	.4
1987	9.0	2.6	6.4	.3	1.2	7.1	.4
1988	9.0	2.7	6.3	.3	1.2	7.1	.4
1989	9.0	2.7	6.3	.3	1.2	7.1	.4
1990	8.9	2.7	6.2	.3	1.2	7.0	.4
1991	8.9	2.7	6.2	.3	1.2	7.0	.4
1992	8.8	2.8	6.0	.3	1.2	6.9	.4
1993	8.8	2.8	6.0	.3	1.2	6.9	.4
1994	8.7	2.8	5.9	.3	1.2	6.8	.4
1995	8.7	2.8	5.9	.3	1.2	6.8	.4
1996	8.7	2.8	5.9	.3	1.2	6.8	.4

*Source: FAA Air Traffic Activity.
Detail may not add to total because of independent rounding.
Aircraft contacted represent a record of the number of aircraft with which FAA facilities (FSS, CS/T) have established radio communications contact. One count is made for each en route, landing or departing aircraft contacted by a facility, regardless of the number of contacts with an individual aircraft. A flight involving contacts with five different facilities, disregarding the number of contacts with each, would be counted as five aircraft contacted.

TABLE 22

ACTIVE PILOTS BY TYPE OF CERTIFICATE
(thousands)

As of January 1	Total	Students	Private	Commercial	Airline Transport	Helicopter	Glider	Other	Instrument Rated (1)
Historical*									
1980	814.7	210.2	343.3	182.1	63.7	5.2	6.8	3.4	247.1
1981	827.0	199.8	357.5	183.4	69.6	6.0	7.0	3.7	260.5
1982	764.2	179.9	328.6	168.6	70.3	6.5	7.4	3.0	252.5
1983	733.3	156.4	322.1	165.1	73.5	7.0	7.8	1.4	255.1
1984	718.0	147.2	318.6	159.5	75.9	7.2	8.2	1.3	254.3
Forecast									
1985	719.7	145.7	315.4	161.9	79.2	7.5	8.6	1.4	256.9
1986	726.8	149.3	312.2	164.1	82.7	7.9	9.1	1.5	262.0
1987	743.0	153.1	318.4	166.0	86.2	8.2	9.5	1.6	269.0
1988	759.2	156.9	324.8	167.7	89.7	8.5	9.9	1.7	277.1
1989	775.5	160.8	331.3	169.3	93.2	8.8	10.3	1.8	285.5
1990	791.2	164.0	337.9	170.7	96.8	9.1	10.7	2.0	294.0
1991	807.1	167.3	344.7	172.0	100.4	9.4	11.1	2.2	302.8
1992	819.3	170.6	348.1	173.0	103.9	9.7	11.6	2.4	311.9
1993	832.0	174.1	351.6	174.2	107.6	10.0	11.9	2.6	321.3
1994	845.0	178.4	355.1	175.1	111.1	10.3	12.2	2.8	330.9
1995	855.5	182.8	356.8	175.9	114.0	10.6	12.4	3.0	339.8
1996	865.7	187.5	358.7	176.7	116.2	10.9	12.6	3.1	349.0

*Source: FAA Statistical Handbook of Aviation
Detail may not add to total because of rounding.
(1) Should not be added to other categories in deriving total.

TABLE 23

ACTIVE U.S. MILITARY AIRCRAFT IN
CONTINENTAL UNITED STATES(1)

Fiscal Year	Total	Fixed Wing Aircraft			Helicopter
		Jet	Turboprop	Piston	
Historical*					
1980	18,969	8,794	1,869	699	7,607
1981	19,363	9,111	1,943	591	7,718
1982	21,728	9,647	1,900	516	9,665
1983r	18,652	9,495	1,745	363	7,049
1984	18,833	9,551	1,777	333	7,172
Forecast					
1985	19,047	9,657	1,800	330	7,260
1986	19,224	9,755	1,826	323	7,320
1987	19,567	9,955	1,834	312	7,466
1988	19,809	10,147	1,856	306	7,500
1989	20,250	10,449	1,862	295	7,644
1990	20,290	10,491	1,848	294	7,657
1991	20,237	10,503	1,852	294	7,588
1992	20,158	10,460	1,837	293	7,568
1993	20,158	10,460	1,837	293	7,568
1994	20,158	10,460	1,837	293	7,568
1995	20,158	10,460	1,837	293	7,568
1996	20,158	10,460	1,837	293	7,568

r = Revised *Source: Office of the Secretary of Defense, Department of Defense.

(1) Includes Army, Air Force, Navy and Marine regular service aircraft, as well as Reserve and National Guard aircraft.

(2) Detailed planning information not available beyond 1992. Fiscal Years 1993 through 1996 projected at 1992 level.

TABLE 24

ACTIVE U.S. MILITARY AIRCRAFT FLYING
HOURS IN CONTINENTAL UNITED STATES(1)
(Thousands)

Fiscal Year	Total	Fixed Wing Aircraft			Helicopter
		Jet	Turboprop	Piston	
Historical*					
1980	5,255	2,904	796	235	1,320
1981	5,850	2,966	840	253	1,791
1982r	6,177	3,347	762	192	1,876
1983	5,767	3,345	746	119	1,557
1984	5,875	3,389	761	120	1,605
Forecast					
1985	5,803	3,309	744	133	1,617
1986	6,158	3,506	800	145	1,707
1987	6,292	3,602	813	145	1,732
1988	6,392	3,659	813	144	1,776
1989	6,531	3,728	808	144	1,851
1990	6,556	3,748	807	144	1,857
1991	6,576	3,779	798	144	1,855
1992	6,618	3,825	797	144	1,852
1993	6,618	3,825	797	144	1,852
1994	6,618	3,825	797	144	1,852
1995	6,618	3,825	797	144	1,852
1996	6,618	3,825	797	144	1,852

r = Revised *Source: Office of the Secretary of Defense, Department of Defense

(1) Includes Army, Air Force, Navy and Marine regular aircraft, as well as Reserve and National Guard Aircraft.

(2) Detailed planning information not available beyond 1992. Fiscal Years 1993 through 1996 projected at 1992 level.

TABLE 25

ECONOMIC ASSUMPTIONS USED IN FAA FORECASTS

Calendar Year	Gross National Product (Billions 1972$)					Consumer Price Index (1967=100)					Fuel Price Index (1972=100)				
	OMB 1/	Chase	DRI	Evans	Wharton	OMB 1/	Chase	DRI	Evans	Wharton	OMB 1/	Chase	DRI	Evans 2/	Wharton
Historical															
1980	1,477.8	1,475.0	1,475.0	1,475.0	1,475.0	239.8	246.8	247.8	247.8	247.8	322.4	337.8	337.8	369.4	337.8
1981	1,506.6	1,512.1	1,512.2	1,513.8	1,513.8	266.3	272.3	271.4	271.4	271.4	367.0	376.4	376.4	410.9	376.4
1982	1,491.9	1,480.0	1,480.0	1,485.4	1,485.4	285.5	289.1	288.0	288.0	288.0	362.2	356.7	356.7	389.5	356.7
1983	1,511.2	1,534.7	1,534.7	1,535.3	1,535.3	295.3	298.3	298.4	298.4	298.3	346.9	344.8	344.8	376.4	345.9
1984E	1,616.9	1,639.5	1,647.3	1,637.5	1,649.1	304.9	311.0	310.9	311.4	306.7	341.7	336.6	339.2	368.6	341.5
Forecast															
1985	1,681.3	1,692.2	1,692.3	1,678.7	1,711.8	317.0	324.4	323.4	323.7	320.2	317.2	326.0	344.0	359.7	345.3
1986	1,748.5	1,735.4	1,725.1	1,728.7	1,731.4	330.7	341.8	338.7	341.3	338.0	312.8	331.6	351.0	372.3	350.3
1987	1,818.5	1,800.5	1,792.9	1,745.9	1,814.4	344.6	361.4	357.0	361.6	354.7	314.3	345.7	369.6	388.5	371.4
1988	1,891.2	1,860.1	1,860.9	1,802.4	1,888.6	358.4	382.3	377.2	383.4	375.2	322.6	375.7	394.7	405.8	394.5
1989	1,965.6	1,916.5	1,918.8	1,881.0	1,930.8	371.6	402.3	399.1	405.6	395.7	334.5	410.7	426.5	423.3	414.6
1990	2,037.6	1,971.7	1,973.2	1,952.3	1,938.9	384.2	424.5	423.2	428.2	418.6	345.8	446.6	462.8	441.0	436.8
1991	2,108.7**	2,027.1	2,028.1	2,021.2	2,032.9	404.6**	448.5	449.3	451.4	435.4	369.1**	488.4	502.0	459.0	458.5
1992	2,168.7**	2,081.9	2,081.0	2,093.3	2,087.0	426.4**	473.9	477.4	475.0	454.5	394.6**	532.9	546.7	477.7	482.5
1993	2,227.8**	2,135.5	2,129.4	2,166.8	2,136.2	449.9**	501.4	508.0	498.6	476.9	422.1**	577.1	597.8	498.0	509.0
1994	2,287.9**	2,190.7	2,175.3	2,249.7	2,183.2	475.2**	529.0	540.7	522.4	504.4	450.7**	619.7	652.8	519.1	538.3
1995	2,338.5**	2,247.7*	2,221.1	2,328.4*	2,196.3	501.4**	558.1*	575.7	547.4*	531.1	481.4**	665.6*	712.9	540.9*	569.5
1996	2,410.5**	2,306.1*	2,268.5	2,407.5*	2,288.5	529.4**	588.8*	612.4	573.7*	560.8	514.4**	714.8*	777.1	563.6*	603.7

* Extrapolated to 1996 for forecast purposes

** Based on consensus growth rates of Chase, DRI, Evans and Wharton Forecasts

1/ Fiscal Year Basis

2/ Component of CPI (1967=100)

Source: Office of Management and Budget, June 1984; Chase Econometrics, November 1984; Data Resources, Inc., Fall, 1984; Evans Economics, Inc., November 1984; and Wharton Econometric Associates, September 1984

TABLE 26

BASELINE AIR CARRIER ASSUMPTIONS - DOMESTIC OPERATIONS

Fiscal Year	Passenger Load Factor Percent	Average Seats Per Aircraft Number	Average Passenger Trip Length Miles	Revenue Per Passenger Mile Current $ Cents	Revenue Per Passenger Mile 67$ Cents	Average Domestic Jet Fuel Price Cents
Historical*						
1980	58.2	139.7	730	10.82	4.51	83.2
1981	57.7	142.9	749	12.93	4.86	100.8
1982	58.4	149.8	761	12.47	4.37	99.3
1983	59.7	152.4	770	11.90	4.03	90.3
1984E	57.8	153.2	759	13.00	4.26	85.1
Forecast						
1985	59.1	156	755	13.33	4.21	79.0
1986	58.9	158	759	13.85	4.19	77.9
1987	60.0	160	763	14.35	4.16	78.3
1988	60.9	163	767	14.92	4.16	80.3
1989	61.7	166	771	15.50	4.17	83.3
1990	61.7	169	775	16.10	4.19	86.1
1991	62.5	172	779	16.91	4.18	91.9
1992	63.0	175	783	17.79	4.17	98.2
1993	63.3	178	787	18.71	4.16	105.1
1994	63.6	181	790	19.72	4.15	112.2
1995	63.3	184	794	20.74	4.14	119.8
1996	63.8	187	798	21.85	4.13	128.1

* Source: Civil Aeronautics Board.

Glossary of Terms

AERIAL APPLICATION
Aerial application in agriculture consists of those activities that involve the discharge of materials from aircraft flight and miscellaneous collection of minor related activities that do not require the distribution of any materials.

AIRCRAFT CONTACTED
Aircraft with which the Flight Service Stations have established radio communications contact. One count is made for each enroute, landing or departing aircraft contacted by Flight Service Station regardless of the number of contacts made with an individual aircraft during the same flight.

AIRCRAFT OPERATION
An aircraft arrival or departure from an airport with FAA airport traffic control service. There are two types of operations--local and itinerant.

1. Local operations are performed by aircraft which:
   (a) Operate in the local traffic pattern or within sight of the tower.
   (b) Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the control tower.
   (c) Execute simulated instrument approaches or low passes at the airport.
2. ITINERANT OPERATIONS:
   All aircraft arrivals and departures other than local operations.

AIRPORT TRAFFIC CONTROL TOWER
A central operations facility in the terminal air traffic control system, consisting of a tower cab structure, including an associated IFR room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices, to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC)
A central operations facility in the air route traffic control system using air/ground communications and radar, primarily providing enroute separation and safe, expeditious movement of aircraft operating under instrument flight rules within the controlled airspace of that center.

AIR TAXI OPERATIONS
Air taxi operations and commuter air carrier operations (takeoffs and landings) carrying passengers, mail or cargo for revenue in accordance with FAR Part 135 or Part 121.

AIR TAXI OPERATORS
Operators of small aircraft "for hire" for specific trips. They operate under CAB Part 298 and FAR 135 which apply to aircraft of 12,500 pounds or less except under special exemption.

AIR TRAFFIC HUB
Air traffic hubs are not airports; they are the cities and Standard Metropolitan Statistical Areas requiring aviation services and may include more than one airport. Communities fall into four classes as determined by each community's percentage of the total enplaned passengers.

Large: 1.00 percent (3,037,206 passengers and over in CY 1983).
Medium: 0.25 percent to 0.99 percent (between 759,302 and 3,037,205 passengers in CY 1983).
Small: 0.05 percent to 0.24 percent (between 151,860 and 759,301 passengers in CY 1983).
Nonhub: Less than 0.05 percent (under 151,859 passengers in CY 1983).

ALL CARGO CARRIER
One of a class of air carriers holding certificates of public convenience and necessity issued by the CAB, authorizing the performance of scheduled air freight, express, and mail transportation over specified routes, as well as the conduct of nonscheduled operations, which may include passengers.

APPROACH CONTROL FACILITY
A terminal air traffic control facility providing approach control service.

AVAILABLE SEAT-MILES (ASM'S)
The aircraft miles flown in each flight stage multiplied by the number of seats available on that stage for revenue passenger use.

BUSINESS TRANSPORTATION
Any use of an aircraft not for compensation or hire by an individual for the purpose of transportation required by a business in which he is engaged.

CERTIFICATED ROUTE AIR CARRIER
An air carrier holding a certificate of public convenience and necessity issued by the Civil Aeronautics Board to conduct scheduled services over specified routes. Certain nonscheduled or charter operations may also be conducted by these carriers.

COMMON IFR ROOM
A highly automated terminal radar control facility. It provides terminal radar service in an area encompassing more than one major airport which accommodates instrument flight operations.

COMMUTER OPERATOR
Operators of small aircraft of a maximum size of 60 seats who perform at least five scheduled round trips per week between two or more points or carry mail. They operate under CAB Part 298, FAR 135, and at times FAR 121.

CONTRACT OPERATOR
An air carrier operating on a private for-hire basis, as distinguished from a public or common air carrier, holding a commercial operator certificate (issued by the FAA under FAR 121) authorizing the carrier to operate aircraft over 12,500 pounds for the transportation of goods or passengers for compensation or hire.

EXECUTIVE TRANSPORTATION
Any use of an aircraft by a corporation, company or other organization for the purposes of transporting its employees and/or property not for compensation or hire and employing professional pilots for the operation of the aircraft.

FAA FLIGHT PLAN
Specified information relating to the intended flight of an aircraft that is filed orally or in writing with a flight service station or an air traffic control facility.

FLIGHT SERVICE STATION (FSS)
Air Traffic Service facilities within the National Airspace System which provides preflight pilot briefing and enroute communications with VFR flights assist lost IFR/VFR aircraft, assist aircraft having

emergencies, relay ATC clearances, originate, classify, and disseminate Notices to Airmen, broadcast aviation weather and NAS information, receive and close flight plans, monitor radio NAVAIDS, notify search and rescue units of missing VFR aircraft, and operate the National weather teletypewriter systems. In addition, at selected locations, FSSs take weather observations, issue airport advisories, administer airmen written examinations, and advise Customs and Immigration of transborder flight.

FOREIGN-FLAG AIR CARRIER
An air carrier other than a U.S. flag air carrier in international air transportation. "Foreign air carrier" is a more inclusive term than "foreign-flag air carrier," presumably including those non-U.S. air carriers operating solely within their own domestic boundaries; but in practice the two terms are used interchangeably.

GENERAL AVIATION
All civil aviation activity except that of certificated route air carriers and air commuter operations. The types of aircraft used in general aviation (GA) activities cover a wide spectrum from corporate multi-engine jet aircraft piloted by professional crews to amature-built single-engine piston acrobatic planes, balloons and dirigibles.

IFR AIRCRAFT HANDLED
The number of IFR departures multiplied by two plus the number of IFR overs. This definition assumes that the number of departures (acceptances, extensions, and originations of IFR flight plan) is equal to the number of landings (IFR flight plans closed).

INDUSTRIAL/SPECIAL FLYING
Any use of an aircraft for specialized work allied with industrial activity, excluding transportation and aerial application. (Examples: pipeline patrol, survey, advertising, photography, helicopter hoist, etc.)

INTERNATIONAL AND TERRITORIAL OPERATIONS
Operators of aircraft flying between the 50 States of the United States and foreign points, between the 50 States and U.S. possessions or territories, and between foreign points. Includes both the combination passenger/cargo and the all cargo carriers engaged in international and territorial operations.

INSTRUCTIONAL FLYING
Any use of an aircraft for the purpose of formal instruction with the flight instructor aboard or with the maneuvers on the particular flight(s) specified by the flight instructor.

INSTRUMENT OPERATION
An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility or air route traffic control center.

LARGE REGIONALS
Certificated air carriers with annual operating revenues of between $10,000,000 and $75,000,000.

MAJORS
Certificated air carriers with annual operating revenues of $1,000,000,000 or more.

MEDIUM REGIONALS
Certificated air carriers with annual operating revenues of less than $10,000,000.

NATIONALS
Certificated air carriers with annual operating revenues of between $75,000,000 and $1,000,000,000.

OTHER USE FLYING
Use of general aviation aircraft for purposes other than those in specific categories, such as business, personal, air taxi.

PERSONAL AND PLEASURE FLYING
Any use of an aircraft for personal purposes not associated with a business or profession, and not for hire. This includes maintenance of pilot proficiency.

PILOT BRIEFING
A service provided by the Flight Service Station to assist pilots in flight planning. Briefing items may include weather information, NOTAMS, military activities, flow control information and other items as requested.

RAPCON
Radar Approach Control Facility (Air Force)

RATCF
Radar Approach Control Facility (Navy).

REGISTERED ACTIVE GENERAL AVIATION AIRCRAFT
A civil aircraft registered with the FAA that has been flown one or more hours during the previous calendar year. Excluded are aircraft owned and operated in regularly scheduled, nonscheduled, or charter service by an air carrier certificated by the Civil Aeronautics Board or aircraft in excess of 12,500 pounds maximum gross takeoff weight owned and operated by a commercial operator certified by the FAA to engage in intrastate common carriage.

REVENUE PASSENGER ENPLANEMENTS
The count of the total number of passengers boarding aircraft. This include both originating and connecting passengers.

REVENUE PASSENGER LOAD FACTOR
Revenue passenger miles as a percent of available seat miles in revenue passenger services, representing the proportion of aircraft seating capacity that is actually sold and utilized.

REVENUE PASSENGER MILE (RPM)
One revenue passenger transported one mile in revenue service.

REVENUE TON MILE (RTM)
One ton of revenue traffic transported one mile.

SECONDARY AIRPORT
An airport receiving approach control service as a satellite to a primary approach control facility, or one at which control is exercised by the approach control facility under tower enroute control procedures.

SUPPLEMENTAL AIR CARRIER
One of a class of air carriers holding certificates, issued by the CAB, authorizing them to perform passenger and cargo charter services supplementing the scheduled service of the certificated route air carriers. They are sometimes referred to as nonscheduled carriers.

TOTAL FLIGHT SERVICES
The sum of flight plans originated and pilot briefs, multiplied by two, plus the number of aircraft contacted.

U.S. FLAG CARRIERS OR AMERICAN FLAG CARRIER
One of a class of air carriers holding a certificate of public convenience and necessity issued by the CAB, approved by the President, authorizing scheduled operations over specified route between the United States (and/or its territories) and one or more foreign countries.

APPENDIX A

ACTIVE COMMERCIAL AIR CARRIERS

	Scheduled/ Charter Carrier 1/	Carrier Group 2/	Reported Traffic 3/ Domestic	Int'l
1. Aerostar (AR)	C	MR	4-88	
2. Air Atlanta (CC)	S	LR		
3. AirCal (OC)	S	M	1-79	
4. Air Midwest (ZV)	S	LR	X	
5. Air National (AN)	C	LR		4-84
6. AirPac	S	LR	4-84	
7. Air Wisconsin (ZW)	S	LR	7-79	
8. Alaska (AS)	S	M	X	
9. All Star (LS)	C	MR	4-83	4-83
10. Aloha (TS)	S	M	X	
11. American (AA)	S	M	X	X
12. American Trans Air (AQ)	C	LR	X	X
13. American West (HP)	S	LR	8-83	
14. Arista (RI)	C	LR	12-82	8-82
15. Arrow (JW)	S	LR	11-82	6-83
16. Best (IW)	S	MR	7-82	
17. Braniff (BI)	S	M	3-84	
18. Buffalo	C	LR	4-84	4-84
19. Challenge (CW)	C	MR		8-82
20. Continental (CO)	S	M	X	X
21. Delta (DL)	S	M	X	X
22. Eastern (EA)	S	M	X	X
23. Emerald (OH)	S	LR	7-82	
24. Empire (UR)	S	LR	10-79	
25. Evergreen (JO)	C	LR	X	X
26. Florida Express (ZO)	S	LR	1-84	
27. Flying Tiger/ Metro Int'l (FT)	S	M		3-82
28. Frontier (FL)	S	M	X	
29. Frontier Horizon (FH)	S	LR	1-84	
30. Galaxy (GY)	C	MR	10-83	12-83
31. Global (GL)	C	LR	X	X
32. Gulf Air Transport (GA)	C	MR	1-82	1-82
32. Hawaiian (HA)	S	M	X	
33. Int'l Air Service (IE)	C	LR	11-83	
35. Jet America (SI)	S	LR	1-82	
36. Jet Charter (JQ)	C	MR	7-82	7-82
37. Jet Fleet (JL)	C	MR	6-83	
38. Markair (BF)	S	LR	X	
39. Midway Express	S	LR	10-84	
40. Midway Metroline (ML)	S	M	11-79	
41. Muse (MC)	S	LR	8-81	
42. New York Air (NY)	S	M	12-80	
43. Northeastern (QS)	S	LR	3-82	
44. Northwest (NW)	S	M	X	X
45. Overseas (OV)	C	LR	10-82	
46. Ozark (OZ)	S	M	X	
47. Pacific Southwest (PS)	S	M	1-79	
48. Pan American (PA)	S	M	X	X
49. People Express (PE)	S	M	5-81	5-83
50. Piedmont (PI)	S	M	X	
51. Reeve (RV)	S	LR	X	
52. Republic (RC)	S	M	X	
53. Rich (XR)	C	MR	1-82	
54. Royale (OQ)	S	LR	3-84	
55. Sky West (QG)	S	MR	7-79	
56. South Pacific Island (HK)	S	LR		7-81
57. Southwest (WN)	S	M	2-79	
58. Sun Country (SC)	C	MR	1-83	3-83
59. Sunworld (JK)	S	LR	5-83	
60. T-Bird (BQ)	C	MR		4-82
61. Tower (FF)	S	LR		11-83
62. Transamerica (TV)	S	M		5-79
63. Trans World (TW)	S	M	X	X
64. United (UA)	S	M	X	4-83
65. USAir (AL)	S	M	X	
66. Western (WA)	S	M	X	X
67. World (WO)	S	M	7-80	5-81

APPENDIX B

CARRIERS NO LONGER INCLUDED IN AIR CARRIER FORECASTS

	Scheduled/ Charter Carrier 1/	Carrier Group 2/	Reported Traffic 3/ Domestic	Reported Traffic 3/ Int'l	Date of Last Reported Traffic 4/
1. AeroMech (RC)	S	MR	7-79		5-81**
2. Air Florida (QH)	S	M	1-79	7-80	7-84*
3. Air Illinois (UX)	S	LR	1-83		2-84*
4. Air Nevada (LV)	S	MR	4-81		7-82**
5. Air New England (NE)	S	MR	X		10-81*
6. Air North (HO)	S	MR	6-80		8-82**
7. Air North/Montana (XG)	S	MR	3-81		8-82**
8. Air One (CB)	S	LR	4-83		10-84*
9. Altair (AK)	S	MR	1-79		9-82*
10. American Int'l (AV)	S	LR	11-82		9-84*
11. Apollo (ID)	S	MR	5-79		7-81**
12. Aspen (AP)	S	MR	X		8-82**
13. Big Sky (GQ)	S	MR	6-79		9-82**
14. Blue Ball (BB)	C	MR	6-83		2-84*
15. Britt (BU)	S	MR	1-81		8-81**
16. Capitol (CL)	S	M	7-80	7-81	11-84*
17. Cascade (CZ)	S	MR	4-80		8-82**
18. Cochise (DP)	S	MR	1-79		12-81*
19. Coleman (CE)	S	MR	9-79		3-80*
20. Colgan (CJ)	S	MR	4-81		3-83**
21. Golden Gate (GG)	S	MR	5-80		7-81*
22. Golden West (GW)	S	MR	2-79		7-82**
23. Great American (FD)	C	MR	10-80		5-81*
24. Guy-America (HX)	S	MR		8-81	2-83*
25. Hawaii Express (LP)	S	LR	10-82		10-83*
26. Imperial (II)	S	MR	1-80		6-82**
27. Kodiak (KO)	S	MR	X		11-82**
28. L. A. B. (JF)	S	MR	1-82		8-82**
29. Mid-South (VL)	S	MR	6-80		2-84*
30. Midstate (IU)	S	MR	7-81		7-82**
31. Mississippe Valley (XV)	S	MR	4-79		6-82**
32. Munz (XY)	S	MR	X		8-83*
33. New Air (NC)	S	MR	5-79		9-82**
34. Pacific East (PE)	S	LR	9-82		3-84*
35. Pacific Express (VB)	S	LR	2-82		10-83*
36. Peninsula (KS)	S	MR	1-82		1-83**
37. Rocky Mountain (JC)	S	MR	7-81		9-82**
38. Sea Airmotive (KJ)	S	MR	1-80		6-82**
39. Southeast (HS)	S	MR	7-79		1-80*
40. Swift Aire (WI)	S	MR	1-79		7-81*
41. Wien (WC)	S	M	X		11-84*
42. Western Yukon (WX)	S	MR	7-81		6-82*
43. Wright (FW)	S	MR	X		11-82**

1/ S-Scheduled; C-Charter

2/ M-Majors; N-Nationals; LR-Large Regionals; MR-Medium Regionals.

3/ Reported traffic designated by X in appropriate box. Date of first reported traffic is indicated for those carriers certificated for scheduled air service since passage of the Airline Deregulation Act of 1978.

4/ Date of last reported traffic is indicated. Carriers that have discontinued scheduled passenger service indicated by *. Carriers now filing CAB Form 298-C in lieu of CAB Form 41 indicated by **.

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